

R. B. Swinton

1895

MALCOLM'S

TREATISE

O F

MUSIC,

Speculative, Practical, and Historical.

Corrected and Abridged,

By an Eminent MUSICIAN.

*Hail Sacred Art! descended from above,
To crown our mortal joys : Of thee we learn,
How happy Souls communicate their Raptures ;
For thou'rt the Language of the Blest in Heaven.
—Divum hominumq; voluptas.*

L O N D O N :

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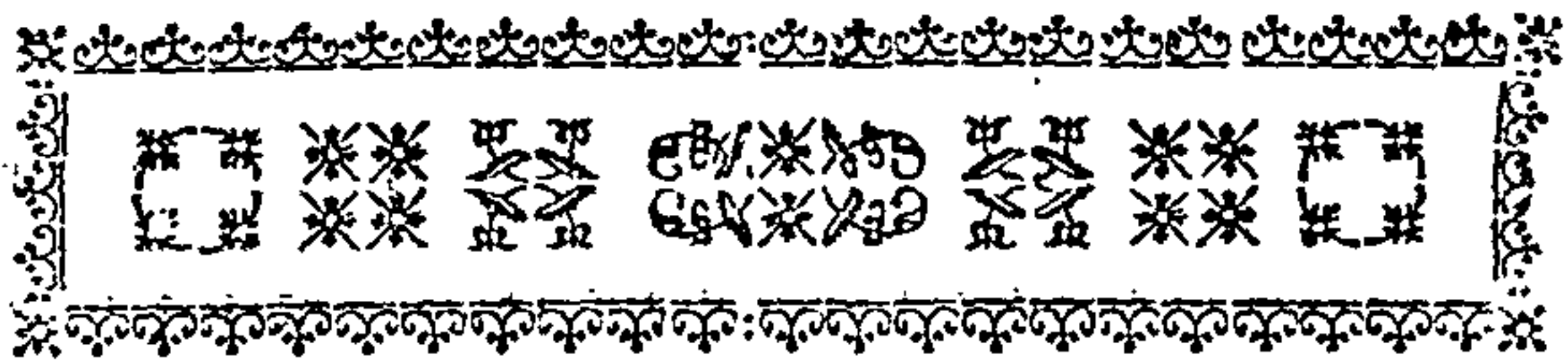
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A
T R E A T I S E
O F
M U S I C.

Of SOUND: the CAUSE of it; and the various
Affections of it concerned in MUSIC.

MUSIC is a science of sounds, whose end is pleasure. Sound is the object in general; or, to speak with the philosophers, it is the material object. But it is not the business of music, taken in a strict and proper sense, to consider every phenomenon and property of sound; that belongs to a more universal philosophy: yet, that we may understand what it is in sounds upon which the formality of music depends; *i. e.* whereby it is distinguished from other sciences, of which sound may also be the object: or, what it is in sounds that makes the particular and proper object of music, whereby it obtains its end; we must a little consider the nature of sound.

Sound is a word that stands for every perception that comes by the ear immediately. And for the nature of the thing, it is now generally agreed upon among philosophers, and also confirmed by experience, to be the effect of the mutual collision, and consequent tremulous motion in bodies communicated

municated to the circumambient fluid of air, and propagated through it to the organs of hearing.

A treatise that were designed for explaining the nature of sound universally, in all its known and remarkable phenomena, should, no doubt, examine very particularly every thing that belongs to the cause of it; first, The nature of that kind of motion in bodies (excited by their mutual percussion) which is communicated to the air; then, how the air receives and propagates that motion to certain distances: And, lastly, How that motion is received by the ear, explaining the several parts of that organ, and their offices, that are employed in hearing. But as the nature and design of what I propose and have essayed in this treatise, does not require so large an account of sounds, I must be content only to consider such phenomena as belong properly to music, or serve for the better understanding of it. In order to which I shall a little farther enlarge the preceding general account of the cause of sound. And,

First, That motion is necessary in the production of sound, is a conclusion drawn from all our experience. Again, that motion exists, first among the small and insensible parts of such bodies as are sonorous, or capable of sound; excited in them by mutual collision and percussion, one against another, which produces that tremulous motion so observable in bodies, especially that have a free and clear sound, as bells, and the strings of musical instruments; then this motion is communicated to, or produces a like motion in the air, or such parts of it as are apt to receive and propagate it: for no motion of bodies at distance can affect our senses (or move the parts of our bodies) without the mediation of other bodies, which receive these motions from the sonorous body, and communicate them to the organs of sense; and no other than a fluid can reasonably be supposed. But we know this also by experience; for a bell in the exhausted receiver of an air-pump can scarcely be heard, which was loud enough before the air was drawn out. In the last place, this motion must be communicated to those parts of the ear that are the proper and immediate instruments of hearing. The mechanism of this noble organ has still great difficulties, which all the industry of the most capable and curious enquirers has not surmounted: there are questions all unsolved about the use of some parts, and perhaps other necessary parts never yet discovered: but
the

the most important question among the learned is about the last and immediate instrument of hearing, or that part which last receives the sonorous motion, and finishes what is necessary on the part of the organ. Consult these with the philosophers and anatomists; I shall only tell you the common opinion, in such general terms as my design permits, thus: Next to the external visible cavity or passage into the ear, there is a cavity, of another form, separate from the former by a thin membrane, or skin, which is called the tympan or drum of the ear, from the resemblance it has to that instrument: within the cavity of this drum there is always air, like that external air which is the medium of sound. Now, the external air makes its impression first on the membrane of the drum, and this communicates the motion to the internal air, by which it is again communicated to other parts, till it reaches at last to the auditory nerve, and there the sensation is finished, as far as matter and motion are concerned; and then the mind, by the laws of its union with the body, has that idea we call sound. It is a curious remark, that there are certain parts fitted for the bending and unbending of the drum of the ear, in order, very probably, to the perceiving sounds that are raised at greater or lesser distances, or whose motions have different degrees of force, like what we are more sensible of in the eye, which by proper muscles (which are instruments of motion) we can move outwards or inwards, and change the very figure of, that we may better perceive very distant or near objects. But I have gone far enough in this.

Lest what I have said of the cause of sound be too general, particularly with respect to the motion of the sonorous body, which I call the original cause, let us go a little farther with it. That motion in any body, which is the immediate cause of its sounding, may be owing to two different causes; one is, the mutual percussion betwixt it and another body, which is the case of drums, bells, and the strings of musical instruments, &c. Another cause is, the beating or dashing of the sonorous body and the air immediately against one another, as in all kind of wind-instruments, flutes, trumpets, hautboys, &c. Now in all these cases, the motion which is the consequence of the mutual percussion betwixt the whole bodies, and is the immediate cause of the sonorous motion which the air conveys to our ears, is an invisible

tremulous or undulating motion in the small and insensible parts of the body. To explain this ;

All visible bodies are supposed to be composed of a number of small and insensible parts, which are of the same nature in every body, being perfectly hard and incompressible : of these infinitely little bodies are composed others that are something greater, but still insensible, and these are different, according to the different figures and union of their component parts : these are again supposed to constitute other bodies greater (which have greater differences than the last) whose different combinations do, in the last place, constitute those gross bodies that are visible and touchable. The first and smallest parts are absolutely hard ; the others are compressible, and are united in such a manner, that being, by a sufficient external impulse, compressed, they restore themselves to their natural, or ordinary state : this compression therefore happening upon the shock or impulse made by one body upon another, these small parts or particles, by their restitutive power (which we also call elastic faculty) move to and again with a very great velocity or swiftness, in a tremulous and undulating manner, something like the visible motions of grosser springs, as the chord of a musical instrument ; and this is what we may call the sonorous motion which is propagated to the ear. But observe that it is the insensible motion of these particles next to the smallest, which is supposed to be the immediate cause of sound ; and of these, only those next the surface can communicate with the air ; their motion is performed in very small spaces, and with extreme velocity ; the motion of the whole, or of the greater parts being no further concerned than as they contribute to the other.

And this is the hypothesis upon which Monsieur Perrault, of the Royal Society in France, explains the nature and phenomena of sound, in his curious treatise upon that subject, "*Essais de Physique*," tom. 2. *Du Bruit*. How this theory is supported I shall briefly shew, while I consider a few applications of it.

Of those hard-bodies that sound by percussion of others, let us consider a bell : strike it with any other hard body, and while it sounds we can discern a sensible tremor in the surface, which spreads more sensibly over the whole, as the shock is greater. This motion is not only in the parts next the surface, but in all the parts through the whole
solidity,

solidity, because we can perceive it also in the inner surface of the bell, which must be by communication with those parts that are immediately touched by the striking body. And this is proved by the ceasing of the sound when the bell is touched in any other part; for this shews the easy and actual communication of the motion. Now this is plainly a motion of the several small and insensible parts changing their situations with respect to one another, which being so many, and so closely united, we cannot perceive their motions separately and distinctly, but only that trembling which we reckon to be the effect of the confusion of an infinite number of little particles so closely joined and moving in infinitely small spaces. Thus far any body will easily go with the hypothesis: but Monsieur Perrault carries it farther, and affirms, That that visible motion of the parts is no otherwise the cause of the sound than as it causes the invisible motion of the yet smaller parts (which he calls particies, to distinguish them from the other which he calls parts, the least of all being with him corpuscles) And this he endeavours to prove by other examples, as of chords and wind-instruments. Let us consider them.

Take a chord or string of a musical instrument, stretched to a sufficient degree for sounding, when it is fixt at both ends, we make it sound by drawing the chord from its strait position, and then letting it go; (which has the same effect as what we properly call percussion) the parts by this drawing, whereby the whole is lengthned, being put out of of their natural state, or that which they had in the strait line, do by their elasticity restore themselves, which causes that vibratory motion of the whole, whereby it moves to and again beyond the strait line, in vibrations gradually smaller, till the motion cease and the chord recover its former position. Now the shorter the chord is, and the more it is stretched in the strait line, the quicker these vibrations are: but however quick they are, Monsieur Perrault denies them to be the immediate cause of the sound; because, says he, in a very long chord, and not very small, stretched only so far as that it may give a distinct sound, we can perceive with our eye, besides the vibrations of the whole chord, a more confused tremor of the parts, which is more discernible towards the middle of the chord, where the parts vibrate in greater spaces in the motion of the whole; this last motion of the parts which is caused by the first vibrations of

the whole, does again occasion a motion in the lesser parts or particles, which is the immediate cause of the sound. And this he endeavours to confirm by this experiment, *viz.* Take a long chord (he says, he made it with one of thirty foot) and make it sound; then wait till the sound quite cease, and then also the visible undulations of the whole chord will cease: if immediately upon this ceasing of the sound, you approach the chord very softly with the nail of your finger, you will perceive a tremulous motion in it, which is the remaining small vibrations of the whole chord, and of the parts caused by the vibrations of the whole. Now these vibrations of the parts, are not the immediate cause of sound; else how comes it that while they are yet in motion they raise no sound? The answer perhaps is this, That the motion is become too weak to make the sound to be heard at any great distance, which might be heard were the tympan of the ear as near as the nail of the finger, by which we perceive the motion. But to carry off this, Mr. Perrault says, That as soon as this small motion is perceived, we shall hear it sound; which is not occasioned by renewing or augmenting the greater vibrations, because the finger is not supposed to strike against the chord, but this against the finger, which ought rather to stop that motion; the cause of this renewed sound therefore is probably, that this weak motion of the parts, which is not sufficient to move the particles (whose motion is the first that ceases) receives some assistance from the dashing against the nail, whereby they are enabled to give the particles that motion which is necessary for producing the sound. But lest it should still be thought, that this encounter with the nail may as well be supposed to increase the motion of the parts to a degree fit for sounding, as to make them capable of moving the particles; we may consider, that the particles being at rest in the parts, and having each a common motion with the whole part, may very easily be supposed to receive a proper and particular motion by that shock; in the same manner that bodies which are relatively at rest in a ship, will be shaken and moved by the shock of the ship against any body that can any thing considerably oppose its motion. Now for as simple as this experiment appears to be, I am afraid it cannot be so easily made as to give perfect satisfaction, because we can hardly touch a string with our nail but it will sound.

But

But Mr. Perrault finishes the proof of his hypothesis by the phænomena of wind-instruments. Take for example a flute; we make it sound by blowing into a long, broad, and thin canal, which conveys the air thrown out of the lungs, till it is dashed against that thin solid part which we call the tongue, or wind-cutter, that is opposite to the lower orifice of the foresaid canal; by which means the particles of that tongue are compressed, and by their restitutive motion, they communicate to the air a sonorous motion, which being immediately thrown against the inner concave surface of the flute, and moving its particles, the motion communicated to the air, by all these particles both of the tongue and inner surface, makes up the whole sound of the flute.

Now to prove that only the very small particles of the inner surface and edge of the tongue are concerned in the sound of the flute, we must consider, that flutes of different matter, as metal, wood, or bone, being of the same length and bore, have none, or very little sensible difference in their sound; nor is this sensibly altered by the different thickness of the flute betwixt the outer and inner surface; nor in the last place, is the sound any way changed by touching the flute, even though it be hard pressed, as it always happens in bells and other hard bodies that sound by mutual percussion. All this Mr. Perrault accounts for by his hypothesis, thus: he tells us, That as the corpuscles are the same in all bodies, the particles which they immediately constitute, have very small differences in their nature and form; and that the specific differences of visible bodies, depend on the differences of the parts made up of these particles, and the various connection of these parts, which make them capable of different modifications of motion. Now, hard bodies that sound by mutual percussion one against another, owe their sounding to the vibrations of all their parts, and by these to the insensible motions of their particles; but according to the differences of the parts and their connections, which make them, either silver, or brass, or wood, &c. so are the differences of their sounds. But in wind-instruments (for example, flutes) as there are no such remarkable differences answering to their matter, their sound can only be owing to the insensible motion of the particles of the surface: for there being very little difference in all bodies, if we suppose the sound is owing to their motions only, it can have none, or very small differences: and because we find this true in fact, it makes the hypothesis extremely probable. I have never re-
deed

deed seen flutes of any matter but wood, except of the small kind we call flagellets, of which I have seen ivory ones, whose sound has no remarkable difference from a wooden one; and therefore I must leave so much of this proof upon Monsieur Perrault's credit. As to the other part, which is no less considerable, that no compression of the flute can sensibly change its sound, it is certain, and every body can easily try it. To which we may add, That flutes of different matter are sounded with equal ease, which could not well be if their parts were to be moved; for in different bodies these are differently moveable. But I must make an end of this part, in which I think it is made plain enough, that the motion of a body which causes a sounding motion in the air, is not any motion which we can possibly give to the whole body, wherein all the parts are moved in one common direction and velocity; but it is the motion of the several small and undistinguishable parts, which being compressed by an external force, do, by their elastic power, restore themselves, each by a motion particular and proper to itself. But whether you will distinguish parts and particles as Mr. Perrault does, I leave to yourselves, my design not requiring any accurate determination of this matter. And now to come nearer to our subject, I shall next consider the differences and affections of sounds that are any way concerned in music.

Sounds are as various, or have as many differences, as the infinite variety of things that concur in their production; which may be reduced to these general heads: First, The quantity, constitution, and figure of the sonorous body; with the manner of percussion, and the consequent velocity of the vibrations of the parts of the body and the air; also their equality and uniformity, or inequality and irregularness. Secondly, The constitution and state of the fluid medium through which the motion is propagated. Thirdly, The disposition of the ear that receives that motion. And, fourthly, The distance of the ear from the sonorous body. To which we may add, lastly, The consideration of the obstacles that interpose betwixt the sonorous body and the ear; with other adjacent bodies that, receiving an impression from the fluid so moved, re-act upon it, and give new modification to the motion, and consequently to the sound. Upon all these do our different perceptions of sound depend.

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The variety and differences of sounds, owing to the various degrees and combinations of the conditions mentioned, are innumerable; but to our present design we are to consider the following distinctions.

1. Sounds, come under the specific distinction, according to the kinds of bodies from which they proceed: thus metal is easily distinguished from other bodies by the sound; and among metals there is great difference of sound, as is discernible, for example, betwixt gold, silver and brass. And for the purpose in hand, a most notable difference is that of stringed and wind-instruments of music, of which there are also sub-divisions: these differences depend, as has been said, upon the different constitutions of these bodies; but they are not strictly within the consideration of music, not the mathematical part of it at least, though they may be brought into the practical; of which afterwards.

2. Experience teaches us, that some sounds can be heard, by the same ear, at greater distances than others; and when we are at the same distance from two sounds, I mean from the sonorous body or the place where the sound first rises, we can determine (for we learn it by experience and observation) which of the two will be heard farthest: by this comparison we have the idea of a difference whose opposite terms are called loud and low (or strong and weak.) This difference depends both upon the nature of different bodies, and upon other accidental circumstances, such as their figure; or the different force in the percussion; and frequently upon the nature of the circumjacent bodies, that contribute to the strengthening of the sound, that is a conjunction of several sounds so united as to appear only as one sound: but as the union of several sounds gives occasion to another distinction, it shall be considered again, and we have only to observe here that it is always the cause of loudness; yet this difference belongs not strictly to the theory of music, though it is brought into the practice, as that in the first article.

3. There is an affection or property of sound, whereby it is distinguished into acute, sharp or high; and grave, flat or low. The idea of this difference you will get by comparing several sounds or notes of a musical instrument, or of a human voice singing. Observe the term *low*, is sometimes opposed to loud, and sometimes to acute, which yet are very different things: loudness is very well measured by the

distance or sphere of audibility, which makes the notion of it very clear. Acuteness, is so far different, that a voice or sound may ascend or rise in degree of acuteness, and yet lose nothing of its loudness, which can easily be demonstrated upon any instrument, or even in the voice; and particularly if we compare the voice of a boy and a man.

This relation of acuteness and gravity is one of the principal things concerned in music, the nature of which shall be particularly considered afterwards; and I shall here observe that it depends altogether upon the nature of the sonorous body itself, and the particular figure and quantity of it; and in some cases upon the part of the body where it is struck. So that, for example, the sounds of two bells of different metals, and the same shape and dimensions, being struck in the same place, will differ as to acuteness and gravity; and two bells of the same metal will differ in acuteness, if they differ in shape or in magnitude, or be struck in different parts: so in chords, all other things being equal, if they differ either in matter, or dimensions, or the degree of tension, as being stretched by different weights, they will also differ in acuteness.

But we must carefully remark, that acuteness and gravity, also loudness and lowness are but relative things; so that we cannot call any sound acute or loud, but with respect to another which is grave or low in reference to the former; and therefore the same sound may be acute or grave, also loud or low in different respects. Again, these relations are to be found not only between the sounds of different bodies, but also between different sounds of the same body, for different force in the percussion will cause a louder or lower sound, and striking the body in different parts will make an acuter or graver sound, as we have remarkably demonstrated in a bell, which as the stroke is greater gives a greater or louder sound, and being struck nearer the open end, gives the graver sound. How these degrees are measured, we shall learn again, only mind that these degrees of acuteness and gravity are also called different and distinguishable tones or tunes of a voice or sound; so we say one sound is in tune with another when they are in the same degree: acute and grave being but relations, we apply the name of tune to them both, to express something that is constant and absolute which is the ground of the relation; in like manner as we apply the name *magnitudo* both to the things we call
great

great and little, which are but relative ideas: each of them have a certain magnitude, but only one of them is great and the other little when they are compared; so of two sounds each has a certain tune, but only one is acute and the other grave in comparison.

4. There is a distinction of sounds, whereby they are denominated long or short; which relates to the duration, or continued, and sensibly uninterrupted existence of the sound. This is a thing of very great importance in music; but to know how far, and in what respect it belongs to it, we must distinguish betwixt the natural and artificial duration of sound. I call that the natural duration or continuity of sound, which is less or more in different bodies, owing to their different constitutions, whereby one retains the motion once received longer than another does; and consequently the sound continues longer (though gradually weaker) after the external impulse ceases; so bells of different metals, all other things being equal and alike, have different continuity of sound after the stroke: And the same is very remarkable in strings of different matter: there is too a difference in the bell or string, according to the force of the percussion. This continuity is sometimes owing to the sudden reflection of the sound from the surface of neighbouring bodies, which is not so properly the same sound continued, as a new sound succeeding the first so quickly as to appear to be only its continuation: But this duration of sound does not properly belong to music, wherefore let us consider the other. The artificial continuity of sound is, that which depends upon the continued impulse of the efficient cause upon the sonorous body for a longer or shorter time, such are the notes of a voice or any wind-instrument, which are longer or shorter as we continue to blow into them; or, the notes of a violin and all stringed instruments that are struck with a bow, whose notes are made longer or shorter by strokes of different lengths or quickness of motion; for a long stroke, if it is quickly drawn, may make a shorter note than a short stroke drawn slowly. Now this kind of continuity is properly the succession of several sounds, or the effect of several distinct strokes, or repeated impulses, upon the sonorous body, so quick that we judge it to be one continued sound, especially if it is continued in one degree of strength and loudness; but it also must be continued in one degree of tune, else it cannot be called one note in music. And this

leads me naturally to consider the very old and notable distinction of a twofold motion of sound, thus,

Sound may move through various degrees of acuteness in a continual flux, so as not to rest on any degree for any assignable, or at least sensible time; which the ancients called the continuous motion of sound, proper only to speaking and conversation. Or, 2^{do}. it may pass from degree to degree, and make a sensible stand at every pitch, so as every degree shall be distinct; this they called the discrete or discontinued motion of sound, proper only to music or singing. But there may be no obscurity here, consider, that as the ideas of motion and distance are inseparably connected, so they belong in a proper sense to bodies and space; and whatever other thing they are applied to, it is in a figurative and metaphorical sense, as here to sounds; yet the application is very intelligible, as I shall explain it. Voice or sound is considered as one individual being, all other differences being neglected except that of acuteness and gravity, which is not considered as constituting different sounds, but different states of the same sound; which is easy to conceive: and so the several degrees or pitches of tune, are considered as several places in which a voice may exist. And when we hear a sound successively existing in different degrees of tune, we conceive the voice to have moved from the one place to the other; and then it is easy to conceive a kind of distance between the two degrees of places; for as bodies are said to be distant, between which other bodies may be placed, so two sounds are said to be at distance, with respect of tune, between which other degrees may be conceived, that shall be acute with respect to the one, and grave with respect to the other. But when the voice continues in one pitch, though there may be many interruptions and sensible rests whereby the sound doth end and begin again, yet there is no motion in that case, the voice being all the time in one place. Now this motion, in a simple and proper sense, is nothing else but the successive existence of several sounds differing in tune. When the successive degrees are so near, that like the colours of a rainbow, they are as it were lost in one another, so that in any sensible distance there is an indefinite number of degrees, such kind of succession is of no use in music; but when it is such that the ear is judge of every single difference, and can compare several differences, and apply some known measure to them, there the object of music does exist; or
when

when there is a succession of several sounds distinct by sensible rests, though all in the same tune, such a succession belongs also to music.

From this twofold motion explained, we see a twofold continuity of sound, both subject to certain and determinate measures of duration; the one is that arising from the continuous motion mentioned, which has nothing to do in music; the other is the continuity or uninterrupted existence of sound in one degree of tune. The differences of sounds in this respect, or the various measures of long and short, or (which is the same at least a consequence) swift and slow in the successive degrees of sound, while it moves in the second manner make a principal and necessary ingredient in music; whose effect is not inferior to any other thing concerned in the practice; and is what deserves to be very particularly considered, though indeed it is not brought under so regular and determinate rules as the differences of tune.

5. Sounds are either simple or compound; but there is a twofold simplicity and composition to be considered here; the first is the same with what we explained in the last article, and relates to the number of successive vibrations of the parts of the sonorous body, and of the air, which comes so fast upon the ear that we judge them all to be one continued sound, though it is really a composition of several sounds of shorter duration. And our judging it to be one, is very well compared to the judgment we make of that apparant circle of fire, caused by putting the fired end of a stick into a very quick circular motion; for suppose the end of the stick in any point of that circle which it actually describes, the idea we receive of it there continues till the impression is renewed by the sudden return; and this being true of every point, we must have the idea of a circle of fire; the only difference is, that the end of the stick has actually existed in every point of the circle, whereas the sound has had interruptions, though insensible to us because of their quick succession; but the things we compare are, the succession of the sounds making a sensible continuity with respect to time, and the succession of the end of the stick in every point of the circle after a whole revolution; for it is by this we judge it to be a circle, making a continuity with respect to space. The author of the *Elucidationes Physicæ* upon D'Cartes music, illustrates it in this manner, says he, As standing corns are bended by one blast of wind, and before they can recover themselves

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the wind has repeated the blast, so that the corn is standing in the same inclined position for a certain time, seems to be the effect of one single action of the wind, which is truly owing to several distinct operations; in like manner the small branches (capillamenta) of the auditory nerve, resembling so many stalks of corn, being moved by one vibration of the air, and this repeated before the nerve can recover its situation, gives occasion to the mind to judge the whole effect to be one sound. The nature of this kind of composition being so far explained, we are next to consider what simplicity in this sense is; and I think it must be the effect of one single vibration, or as many vibrations as are necessary to raise in us the idea of sound; but perhaps it may be a question, whether we ever have, or if we can raise such an idea of sound: there may be also another question, whether any idea of sound can exist in the mind for an indivisible space of time; the reason of this question is, that if every sound exists for a finite time, it can be divided into parts of a shorter duration, and then there is no such thing as an absolute simplicity of this kind, unless we take the notion of it from the action of the external cause of sound, *viz.* the number of vibrations necessary to make sound actually exist, without considering how long it exists; but as it is not probable that we can ever actually produce this, *i. e.* put a body in a sounding motion, and stop it precisely when there are as many vibrations finished as are absolutely necessary to make sound, we must reckon the simplicity of sound, considered in this manner, and with respect to practice, a relative thing; that being only simple to us which is the most simple, either with respect to the duration or the cause, that we ever hear: but whether we consider it in the repeated action of the cause or the consequent duration, which is the subject of the last article, there is still another simplicity and composition of sounds very different from that, and of great importance in music, which I shall next explain.

A simple sound is the product of one voice or individual body, as the sound of one flute or one man's voice. A compound sound consists of the sounds of several distinct voices or bodies, all united in the same individual time and measure of duration, *i. e.* all striking the ear together, whatever their other difference may be. But we must here distinguish a natural and artificial composition; to understand this, remember,

member, that the air being put into motion by any body, communicates that motion to other bodies; the natural composition of sounds is therefore, that which proceeds from the manifold reflections of the first sound, or that of the body which first communicates sounding motion to the air, as the flute or violin in one's hand; these reflections, being many, according to the circumstances of the place, or the number, nature, and situations of the circumjacent bodies, make sounds more or less compound. This is a thing we know by common experience; we can have a hundred proofs of it every day by singing, or sounding any musical instrument in different places, either in the fields or within doors; but these reflections must be such as returning very suddenly do not produce what we call an echo, and have only this effect, to increase the sound, and make an agreeable resonance; but still in the same tune with the original note; or, if it be a composition of different degrees of tune, they are such as mix and unite, so that the whole agrees with that note. But this composition is not under rules of art; for though we learn by experience how to dispose these circumstances that they may produce the desired effect, yet we neither know the number or different tunes of the sounds that enter into this composition; and therefore they come not under the musician's direction in what is hereafter called the composition of music; his care being only about the artificial composition, or that mixture of several sounds, which being made by art, are separable and distinguishable one from another. So the distinct sounds of several voices or instruments, or several notes of the same instrument, are called simple sounds, in distinction from the artificial composition, in which to answer the end of music, the simples must have such an agreement in all relations, but principally and above all in acuteness and gravity, that the ear may receive the mixture with pleasure.

6. There remains another distinction of sound necessary to be considered, whereby they are said to be smooth and even, or rough and harsh; also clear or blunt, hoarse and obdurate; the ideas of these differences must be sought from observations; as to the cause of them, they depend upon the disposition and state of the sonorous body, or the circumstances of the place. Smooth and rough sounds depend upon the body principally; we have a notable example of rough and harsh sound in strings that are unevenly and not of the same constitution and distension throughout; and for
this

this reason that their sounds are very grating, they are called false strings. I will let you in few words hear how Monsieur Perrault accounts for this. He affirms that there is no such thing as a simple sound, and that the sound of the same bell or chord is a compound of the sounds of the several parts of it; so that where the parts are homogeneous, and the dimensions or figure uniform, there is always such a perfect union and mixture of all these sounds that makes one uniform, smooth and evenly sound; and the contrary produces harshness; for the likeness of parts and figure makes an uniformity of vibrations, whereby a great number of similar and coincident motions conspire to fortify and improve each other mutually, and unite for the more effectual production of the same effect. He proves his hypothesis by the phenomena of a bell, which differs in tone according to the part you strike, and yet strike it any where there is a motion over all the parts; he considers therefore the bell as composed of an infinite number of rings, which according to their different dimensions have different tones, as chords of different lengths have (*cæteris paribus*) and when it is struck, the vibrations of the parts immediately struck specify the tone, being supported by a sufficient number of consonant tones in other parts: and to confirm this he relates a very remarkable thing; he says, He happened in a place where a bell sounded a fifth acuter than the tone it used to give in other places; which in all probability, says he, was owing to the accidental disposition of the place, that was furnished with such an adjustment for reflecting that particular tone with force, and so unfit for reflecting others, that it absolutely prevailed and determined the concord and total sound to the tone of that fifth. If we consider the sound of a violin, and all stringed instruments, we have a plain demonstration that every note is the effect of several more simple sounds; for there is not only the sound resulting from the motion of the string, but also that of the motion of the parts of the instrument; that this has a very considerable effect in the total sound is certain because we are very sensible of the tremulous motion of the parts of the violin, and especially, because the same string upon different violins sounds very differently, which can be for no other reason but the different constitutions, of the parts of these instruments, which being moved by communication with the string increase the sound, and make it more or less agreeable, according to their different natures:

But Perrault affirms the same of every string in itself without considering the instrument; he says, every part of the string has its particular vibrations different from the gross and sensible vibrations of the whole, and these are the causes of different motions (and sounds) in the particles; which being mixed and unite, as was said of the sounds that compose the total sound of a bell, make an uniform and evenly composition, wherein not only one tone prevails, but the mixture is smooth and agreeable; but when the parts are unevenly and irregularly constitute, the sound is harsh and the string from that called false. And therefore such a string, or other body having the like fault, has no certain and distinct tone, being a composition of several tones that do not unite and mix so as to have one predominant that specifies the total tone.

Again for clear or hoarse sounds they depend upon circumstances that are accidental to the sonorous body; so a man's voice, or the sound of an instrument, will be hollow and hoarse, if it is raised within an empty hogshhead, which is clear and bright out of it; the reason is very plainly the mixture of other and different sounds raised by reflection, that corrupt and change the species of the primitive and direct sound.

Now that sounds may be fit for obtaining the end of music they ought to be smooth and clear; especially the first, because if they have not one certain and discernible tone, capable of being compared to others, and standing to them in a certain relation of acuteness, whose differences the ear may be able to judge of and measure, they cannot possibly answer the end of music, and therefore are no part of the object of it.

But there are also sounds which have a certain tone, yet being excessive, either in acuteness or gravity, bear not that just proportion to the capacity of the organs of hearing, as to afford agreeable sensations. Upon the whole then we shall call that harmonic or musical sound, which being clear and even is agreeable to the ear, and gives a certain and discernible tune (hence also called tunable sound) which is the subject of the whole theory of harmony.

Thus we have considered the properties and affections of sound that are any way necessary to the subject in hand; and of all the things mentioned, the relation of acuteness and gravity, or the tune of sounds, is the principal ingredient

dient in music; the distinctness and determinateness of which relation gives sound the denomination of harmonical or musical: next to which are the various measures of duration: There is nothing in sounds without these that can make music; a just theory whereof abstracts from all other things, to consider the relations of sounds in the measures of tune and duration; though indeed in the practice other differences are considered (of which something more may be said afterwards) but they are so little, compared to the other two, and under so very general and uncertain theory, that I do not find they have ever been brought into the definition of music.

A DEFINITION and DIVISION of Music.

WE may from what is already said affirm, that music has for its object, in general, sound; and particularly, sounds considered in their relations of tune and duration, as under that formality they are capable of affording agreeable sensations. I shall therefore define music, a science that teaches how sounds under certain measures of tune and time, may be produced; and so ordered or disposed, as in consonance (*i. e.* joint sounding) or succession, or both, they may raise agreeable sensations.

Pleasure I have said is the immediate end of music; I suppose it therefore as a principle, that the objects proposed, are capable, being duly applied, to affect the mind agreeably: nor is it a precarious principle; experience proves, and we know by the infallible testimony of our senses, that some simple sounds succeed others upon the ear with a positive pleasure, others disagreeably; according to the certain relations of tune and time; and some compound sounds are agreeable, others offensive to the ear; and that there are degrees and variety in this pleasure, according to the various measures of these relations. For what pretences are made to the application of music to some other purposes than mere pleasure or recreation, as these are obtained chiefly by means of that pleasure, they cannot be called the immediate end of it.

From the definition given, we have the science divided into these two general parts. First, The knowledge of the *Materia Musica*, or, how to produce sounds, in such relations of tune and time as shall be agreeable in consonance
or

or succession, or both. I do not mean the actual producing of the sounds by an instrument or voice, which is merely the mechanical or effective part; but the knowledge of the various relations of tune and time, which are the essential principles out of which the pleasure sought arises, and upon which it depends. This is the pure speculative part of music. Second, How these principles are to be applied; or, how sounds, in the relations that belong to music (as these are determined in the first part) may be ordered, and variously put together in succession and consonance so as to answer the end; which part we rightly call, The art of composition; and it is properly the practical part of music.

Some have added a third part, *viz.* The knowledge of instruments; but as this depends altogether upon the first, and is only an application or expression of it, it could never be brought regularly into the definition; and so can be no part of the division of the science; yet may it deserve to be treated of, as a consequent or dependent of it, and necessary to be understood for the effectual part. As this has no share in my design, I shall detain you but while I say, in a few words, what I think such a treatise should contain. And *imo*, There should be a theory of instruments, giving an account of their frame and construction, particularly, how, supposing them completely provided of all their apparatus, each contains in it the principles of music, *i. e.* how the several degrees of tune pertaining to music are to be found upon the instruments. The second part should contain the practice of instruments, in such directions as might be helpful for the dextrous and nice handling of them, or the elegant performance of music: and here might be annexed rules for the right use of the voice. But after all, I believe these things will be more successfully done by a living instructor, I mean a skilful and experienced master, with the use of his voice or instrument: though I doubt not such might help us too by rules; but I have done with this.

You must next observe with me, that as the art of common writing is altogether distinct from the sciences to which it is subservient by preserving what would otherwise be lost, and communicating thoughts at distance; so there is an art of writing proper to music, which teaches how, by a fit and convenient way of representing all the degrees and measures of sound, sufficient for directing in the executive part, one

who understands how to use his voice or instrument, the artist when he has invented a composition answering the principles and end of music, may preserve it for his own use, or communicate it to another present or absent. To this I have very justly given a place in the following work, as it is a thing of a general concern to music, though no part of the science, and merely a handmaid to the practice; and particularly as the knowledge of it is necessary for carrying on my design. I now return to the division above made, which I shall follow in explaining this science.

The first general branch of this subject, which is the contemplative part, divides naturally into these. First, The knowledge of the relations and measures of tune. And, secondly, of time. The first is properly what the ancients properly called *Harmonica*, or the doctrine of harmony in sounds; because it contains an explication of the grounds, with the various measures and degrees of the agreement (harmony) of sounds in respect of their tune. The other they called *Rythmica*, because it treats of the numbers of sounds or notes with respect to time, containing an explication of the measures of long and short, or swift and slow in the succession of sounds.

The second general branch, which is the practical part, as naturally divides into two parts answering to the parts of the first: that which answers to the Harmonica, the ancients called *Melopæia*; because it contains the rules of making songs with respect to tune and harmony of sounds; though indeed we have no ground to believe that the ancients had any thing like composition in parts. That which answers to the Rythmica, they called *Rythmopæia*, containing the rules concerning the application of the numbers and time.

A GENERAL ACCOUNT OF THE METHOD OF WRITING MUSIC.

WHAT this title imports is necessary to be well understood, and to come to the thing itself let us consider.

It was not enough to have discovered so much of the nature of sound, as to make it serviceable to our pleasure, by the various combinations of the degrees of tune, and
measures

measures of time; it was necessary also, for enlarging the application, to find a method how to represent these fleeting and transient objects, by sensible and permanent signs; whereby they are as it were arrested: and what would otherwise be lost even to the composer, he preserves for his own use, and can communicate it to others at any distance; I mean he can direct them how to raise the like ideas to themselves, supposing they know how to take sounds in any relation of tune and time directed; for the business of this art properly is, to represent the various degrees and measures of tune and time in such a manner, that the connection and succession of the notes may be easily and readily discovered, and the skilful practiser may at sight find his notes, or, as they speak, read any song.

As the two principal parts of music are the tune and time of sounds, so the art of writing it is very naturally reduced to two parts corresponding to these. The first, or the method of representing the degrees of tune, I shall explain in this chapter; which will lead me to say something in general of the other, a more full and particular account whereof you shall have in the next chapter.

We have already seen how the degrees of tune or the scale of music may be expressed by seven letters repeated as oft as we please in a different character; but these, without some other signs, do not express the measures of time, unless we suppose all the notes of a song to be of equal length. Now, supposing the thing to be made not much more difficult by these additional signs of time, yet the whole is more happily accomplished in the following manner.

If we draw any number of parallel lines, as in plate I. fig. 7. then, from every line to the next space, and from every space to the next line up and down, represents a degree of the diatonick scale; and consequently from every line or space to every other at greater distance represents some other degree of the scale, according as the immediate degrees from line to space, and from space to line are determined. Now to determine these we make use of the scale express'd by seven letters, as already explained, *viz.* *c: d; e. f: g; a: b. c—* where the tone greater is represented by a colon (:) the tone lesser by a semicolon (;) and the semitone greater by a (.). If the lines and spaces are marked and named by these letters, as you see in the figure, then according to the relations assigned to these letters (*i. e.* to the sounds express'd

prest by them) the degrees and intervals of sound express by the distances of lines and spaces are determined.

As to the extent of the scale of music, it is infinite if we consider what is simply possible, but for practice, it is limited; and in the present practice 4 octaves, or at most 4 octaves with a 6th, comprehending 34 diatonick notes, is the greatest extent. There is scarcely any one voice to be found that reaches near so far, though several different voices may; nor any one single piece of melody, that comprehends so great an interval betwixt its highest and lowest note: yet we must consider not only what melody requires, but what the extent of several voices and instruments is capable of, and what the harmony of several of them requires; and in this respect the whole scale is necessary, which you have represented in the figure directed to; I shall therefore call it the universal system, because it comprehends the whole extent of modern practice.

But the question still remains, how any particular order and succession of sounds is represented? And this is done by setting certain signs and characters one after another, up and down on the lines and spaces, according to the intervals and relations of tune to be express; that is, any one letter of the scale, or the line or space to which it belongs, being chosen to set the first note on, all the rest are set up and down according to the mind of the composer, upon such lines and spaces as are at the designed distances, *i. e.* which express the designed interval according to the number and kind of the intermediate degrees; and mind that the first note is taken at any convenient pitch of tune; for the scale, or the lines and spaces, serve only to determine the tune of the rest with relation to the first, leaving us to take that as we please: for example, if the first note is placed on the line *c*, and the next designed a tone or 2d *g.* above, it is set on the next space above, which is *d*; or if it is designed a 3d *g.* it is set on the line above which is *e*; or on the second line above, if it was designed 5th, as you see represented in the 2d column of the scale in the preceding figure, where I have used this character *O* for a note. And here let me observe in general, that these characters serve not only to direct how to take the notes in their true tune, by the distance of the lines and spaces on which they are set; but by a fit number and variety of them (to be explained in the next chapter) they express
the

the time and measure of duration of the notes; whereby it is plain that these two things are no way confounded; the relative measures of tune being properly determined by the distances of lines and spaces, and the time by the figure of the note or character.

It is easy to observe what an advantage there is in this method of lines and spaces, even for such music as has all its notes of equal length, and therefore needs no other thing but the letters of the scale to express it; the memory and imagination are here greatly assisted, for the notes standing upward and downward from each other on the lines and spaces, express the rising and falling of the voice more readily than different characters of letters; and the intervals are also more readily perceived.

Observe in the next place, that with respect to instruments of music, I suppose their notes are all named by the letters of the scale, having the same distances as already stated in the relations of sounds express'd by these letters; so that knowing how to raise a series of sounds from the lowest note of any instrument by diatonick degrees (which is always first learned) and naming them by the letters of the scale, it is easily conceived how we are directed to play on any instrument, by notes set upon lines and spaces that are named by the same letters. It is the business of the masters and professors of several instruments to teach the application more expressly. And as to the human voice, observe, the notes thereof, being confined to no order, are called *c* or *d*, &c. only with respect to the direction it receives from this method; and that direction is also very plain; for having taken the first note at any convenient pitch, we are taught by the places of the rest upon the lines and spaces how to tune them in relation to the first, and to one another.

Again, as the artificial notes which divide the tones of the natural series, are express'd by the same letters, with these marks, *♯*, *b*, already explained, so they are also placed on the same lines and spaces, on which the natural note named by that letter stands; thus *c*♯ and *c* belong to the same line or space, as also *d*♯ and *d*. And when the note on any line or space ought to be the artificial one, it is marked *♯* or *b*; and where there is no such mark it is always the natural note. Thus if from *c* (natural) we would set a 3d *g*, upward, it is *c*♯; or a 3d *f*. above *g*,

it is *b* flat or *b*. These artificial notes are all determined on instruments to certain places or positions, with respect to the parts of the instrument and the hand ; and for the voice they are taken according to the distance from the last note, reckoned by the number of tones and semitones that every greater interval contains.

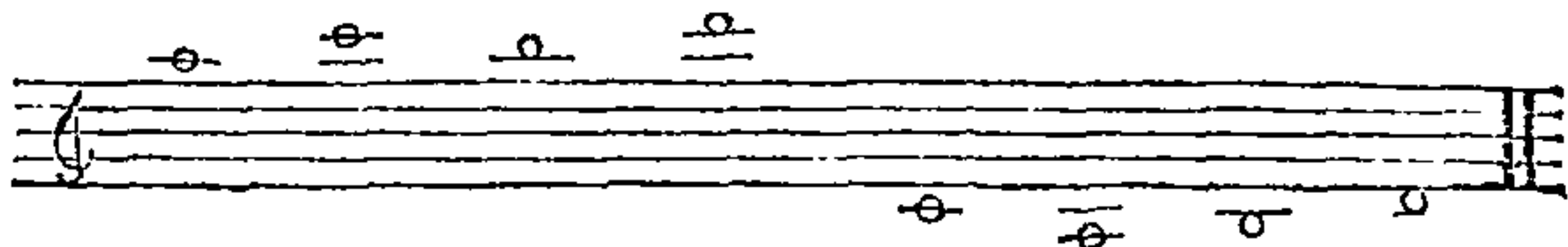
The last general observe I make here is, that as there are twelve different notes in the semitonic scale, the writing might be so ordered, that from every line a space to the next space or line should express a semitone ; but it is much better contrived, that these should express the degrees of the diatonick scale (*i. e.* some tones some semitones) for hereby we can much easier discover what is the true interval between any two notes, because they are fewer lines and spaces interposed, and the number of them such as answers to the denomination of the intervals ; so an octave comprehends four lines and four spaces ; a 5th comprehends three lines and two spaces, or three spaces and two lines ; and so of others. I have already shewn, how it is better that there should be but seven different letters, to name the twelve degrees of the semitonic scale ; but supposing there were twelve letters, it is plain we should need no more lines to comprehend an octave, because we might assign two letters to one line or space, as well as to make it, for example, both *c*✱ and *c*, whereof the one belongeth to the diatonick series, should mark it for ordinary, and upon occasions the other be brought in the same way we now do the signs ✱ and *b*.

A MORE PARTICULAR ACCOUNT OF THE METHOD ;
WHERE, OF THE NATURE AND USE OF CLEFS.

THOUGH the scale extends to thirty-four diatonick notes, which require seventeen lines with their spaces, yet because no one single piece of melody comprehends near so many notes, whatever several pieces joined in one harmony comprehend among them ; and because every piece or single song is directed or written distinctly by itself ; therefore we never draw more than five lines, which comprehend the greatest number of the notes of any single piece ; and for those cases which require more we draw short lines occasionally

occasionally, above or below the 5, to serve the notes that go higher or lower.

E X A M P L E:



Again, though every line and space may be marked at the beginning with its letter, as has been done in former times; yet, since the art has been improving, only one line is marked, by which all the rest are easily known, if we reckon up or down in the order of the letters; the letter marked is called the clef or key, because by it we know the names of all the other lines and spaces, and consequently the true quantity of every degree and interval. But because every note in the octave is called a key, though in another sense this letter marked is called in a particular manner the signed clef, because being written on any line, it not only signs or marks that one, but explains all the rest. And to prevent ambiguity in what follows, by the word Clef I shall always mean that letter which, being marked on any line, explains all the rest, and by the word Key the principal note of any song in which the melody closes, in the sense explained in the last chapter. Of these signed clefs there are three, viz. *c*, *f*, *g*; and that we may know the improvement in having but one signed clef in one particular piece, also how and for what purpose three different clefs are used in different pieces, consider the following definition.

A Song is either simple or compound. It is a simple song, where only one voice performs; or, though there be more, if they are all unison or octave, or any other concord in every note, it is still but the same piece of melody, performed by different voices in the same or different pitches of tune, for the intervals of the notes are the same in them all. A compound song is where two or more voices go together, with a variety of concords and harmony; so that the melody each of them makes is a distinct and different simple song, and all together make the compound. The melody that each of them produces is therefore called a part of the composition; and all such compositions are very properly called symphonic music, or music in parts; taking the word music here for the composition or song itself.

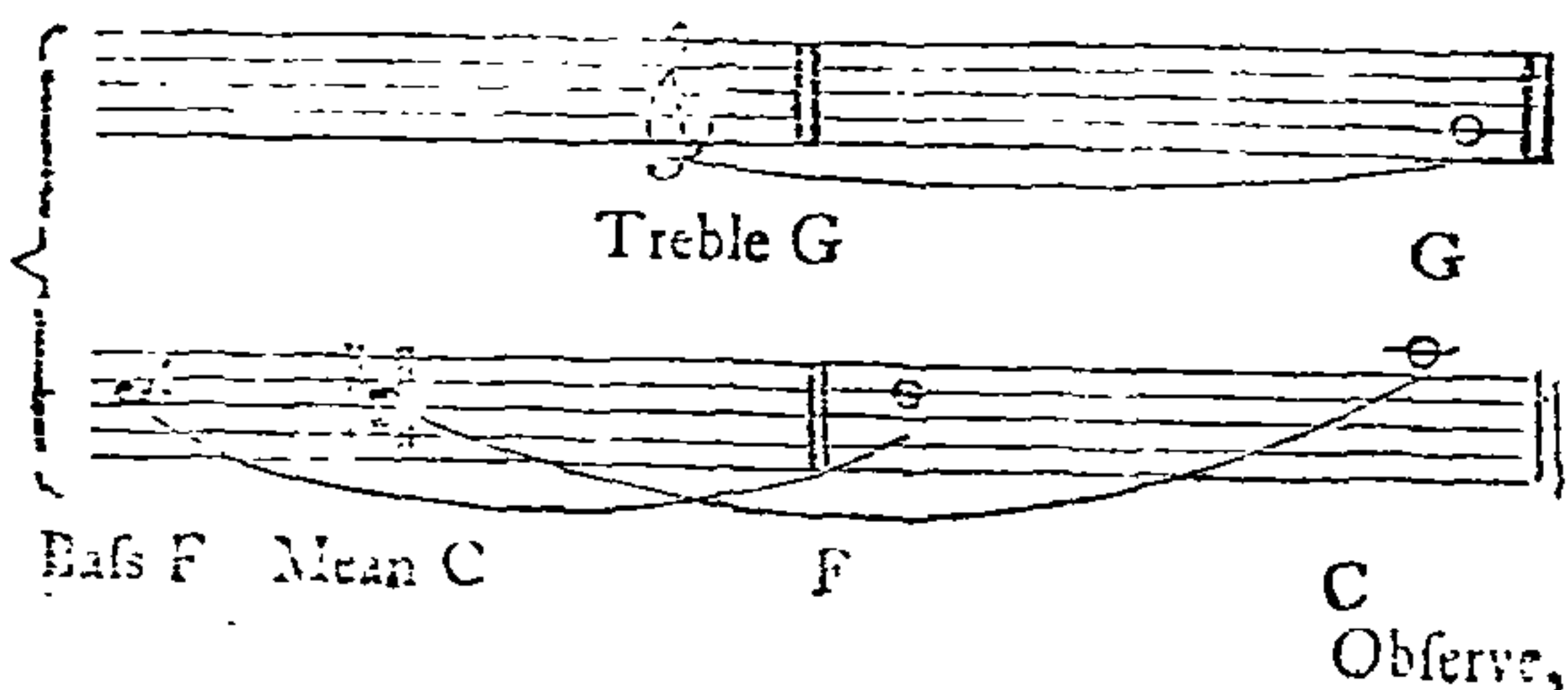
Now, because in this composition the parts must be some of them higher and some lower (which are generally so ordered

dered that the same part is always highest or lowest, though in modern compositions they do frequently change) and all written distinctly by themselves, as is very necessary for the performance ; therefore the staff of five lines upon which each part is written, is to be considered as a part of the universal system or scale, and is therefore called a particular system ; and because there are but five lines ordinarily, we are to suppose as many above and below as may be required for any single part ; which are actually drawn in the particular places where they are necessary.

The highest part is called the treble, or alt, whose clef is *g*, set on the 2d line of the particular system, counting upward : the lowest is called the bass, i. e. basis, because it is the foundation of the harmony, and formerly in their plain compositions the bass was first made, though it is otherwise now ; the bass clef is *f* on the 4th line upward : all the other parts, whose particular names you will learn from practice, I shall call mean parts, whose clef is *c*, sometimes on one, sometimes on another line ; and some that are really mean parts are set with the *g* clef ; and observe that the *c* and *f* clefs are marked with signs no-way resembling these letters ; I think it were as well if we used the letters themselves, but custom has carried it otherwise ; yet that it may not seem altogether a whim, Kepler, chap. book 3. of his Harmony, has taken critical pains to prove, that these signs are only corruptions of the letters they represent ; the curious may consult him.

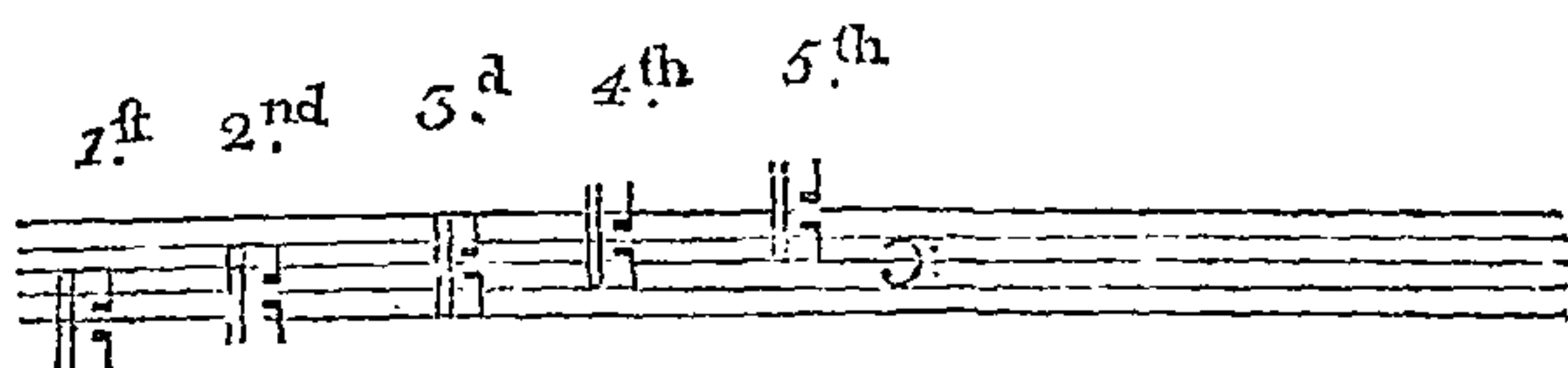
We are next to consider the relations of these clefs to one another ; that we may know where each part lies in the scale or general system, and the natural relation of the parts among themselves, which is the true design and office of the clefs. Now they are taken 5ths to one another, that is, the clef *f* is lowest, *c* is a 5th above it, and *g* a 5th above *c*.

EXAMPLE. or thus



Observe, that though in the particular systems, the treble or *g* clef is ordinarily set on the 2d line, the bass or *f* clef on the 4th line, and the mean or *c* clef on the 3d line (especially when there are but three parts) yet they are to be found on other lines; as particularly the mean clef, which most frequently changes place (because there are many mean parts) is sometimes on the 1st, 2d, 3d, 4th, and 5th lines; but on their removal have different names.

E X A M P L E.



1st Soprano : 2d Mezzo Soprano : 3d Contra Tenor : 4th Tenor : 5th Tenor Bass. — The person who sings from this last named clef may prove his notes either from the mean on the 5th line, or bass on the 3d; but on whatever line in the separate particular system any clef is signed, it must be understood to belong to the same place of the general system, and to be the same individual note or sound on the instrument which is directed by that clef; so that to know what part of the scale any particular system is, we must take its clef where it stands signed in the scale, and take as many lines above and below it, as there are in the particular system; or thus, we must apply the particular system to the scale, so as the clef lines coincide, and then we shall see with what lines of the scale the other lines of the particular system coincide: For example, if we find the clef on the 3d line upward in a particular system; to find the coincident five lines to which it refers in the scale, we take with the *f* clef line, two lines above and two below. Again, if we have the *c* clef on the 4th line, we are to take in the scale with the clef line, one line above and three below, and so of others; so that according to the different places of the clef in a particular system, the lines in the scale correspondent to that system may be all different, except the clef line which is invariable: and that you may with ease find in the

scale the five lines coincident with every particular system, upon whatever line of the five the clef may be set.

As to the reason of changing the relative place of the clef, i. e. its place in the particular system, it is only to make this comprehend as many notes of the song as possible, and by that means to have fewer lines above or below it; so if there are many notes above the clef note and few below it, this purpose is answered by placing the clef in the first or second line; but if the song goes more below the clef, then it is best placed higher in the system: in short, according to the relation of the other notes to the clef note, the particular system is taken differently in the scale, the clef line making one in all the variety, which consists only in this, viz. taking any five lines immediately next other, whereof the clef line must always be one.

By this constant and invariable relation of the clefs, we learn easily how to compare the particular systems of several parts, and know how they communicate in the scale, i. e. which lines are unison, and which are different, and how far, and consequently what notes of the several parts are unison, and what not: For you are not to suppose that each part has a certain bounds within which another must never come; no, some notes of the treble, for example, may be lower than some of the mean parts, or even of the bass; and that not only when we compare such notes as are not heard together, but even such as are. And if we would put together in one system, all the parts of any composition that are written separately. The rule is plainly this, viz. place the notes of each part at the same distances above and below the proper clef, as they stand in the separate system. And because all the notes that are consonant (or heard together) ought to stand, in this design, perpendicularly over each other, therefore that the notes belonging to each part may be distinctly known, they may be made with such differences as shall not confuse or alter their significations with respect to time, and only signify that they belong to such a part; by this means we shall see how all the parts change and pass thro' one another, i. e. which of them, in every note, is highest or lowest or unison; for they do sometimes change, tho' more generally the treble is highest and the Bass lowest, the change happening more ordinarily betwixt the mean parts among themselves, or these with the
treble

treble or bass: The treble and bass clefs are distant an octave and tone, and their parts do seldom interfere, the treble moving more above the clef note, and the bass below.

We see plainly then, that the use of particular signed clefs is an improvement with respect to the parts of any composition; for unless some one key in the particular systems were distinguished from the rest, and referred invariably and constantly to one place in the scale, the relations of the parts could not be distinctly marked; and that more than one is necessary, is plain from the distance there must be among the parts: Or if one letter is chosen for all, there must be some other sign to shew what part it belongs to, and the relation of the parts. Experience having approved the number and relations of the signed clefs which are explained, I shall add no more as to that, but there are other things to be here observed.

The choosing these letters *f . c . g* for signed clefs, is a thing altogether arbitrary; for any other letter within the system, will explain the rest as well; yet 'tis fit there be a constant rule, that the several parts may be right distinguished; and concerning this observe again, that for the performance of any single piece the clef serves only for explaining the intervals among the lines and spaces, so that we need not mind what part of any greater system it is, and we may take the first note as high or low as we please: For as the proper use of the scale is not to limit the absolute degree of tone, so the proper use of the signed clef is not to limit the pitch, at which the first note of any part is to be taken, but to determine the tune of the rest with relation to the first, and, considering all the parts together, to determine the relations of their several notes, by the relations of their clefs in the scale: And so the pitch of tune being determined in a certain note of one part, the other notes of that part are determined, by the constant relations of the letters of the scale; and also the notes of the other parts, by the relations of their clefs. To speak particularly of the way of tuning the instruments that are employed in executing the several parts, is out of my way; I shall only say this, that they are to be so tuned as the clef notes, wherever they lie on the instrument, which serve each part, be in the forementioned relations to one another.

As

As the harpsichord or organ (or any other of the kind) is the most extensive instrument, we may be helped by it to form a clearer idea of these things : For consider, a harpsichord contains in itself all the parts of music, I mean the whole scale or system of the modern practice ; the foremost range of keys contains the diatonic series beginning, in the largest kind, in *g*, and extending to *c* above the fourth *8ve* ; which therefore we may well suppose represented by the preceeding scale. In practice, upon that instrument, the clef notes are taken in the places represented in the scheme ; and other instruments are so tuned, that, considering the parts they perform, all their notes of the same name are unison to those of the harpsichord that belong to the same part. I have said, the harpsichord contains all the parts of music ; and indeed any two distinct parts may be performed upon it at the same time and no more ; yet upon two or more harpsichords tuned unisons, whereby they are in effect but one, any number of parts may be executed : And in this case we should see the several parts taken in their proper places of the instrument, according to the relations of their clefs explained : And as to the tuning the instrument, I shall only add, that there is a certain pitch to which it is brought, that it may be neither too high nor too low, for the accompaniment of other instruments, and especially for the human voice, whether in unison or taking a different part ; and this is called the *Confort Pitch*. To have done, you must consider, that for performing any one single part, we may take the clef note in any *8ve*, i. e. at any note of the same name, providing we go not too high or too low for finding the rest of the notes of the song : But in a consort of several parts, all the clefs must be taken, not only in the relations, but also in the places of the system already mentioned, that every part may be comprehended in it : Yet still you are to mind, that the tune of the whole, or the absolute pitch, is in itself an arbitrary thing, quite foreign to the use of the scale ; tho' there is a certain pitch generally agreed upon, that differs not very much in the practice of any one nation or set of musicians from another. And therefore,

When I speak of the place of the clefs in the scale or general system, you must understand it with respect to a scale of a certain determined extent ; for this being undetermined,

ed, so must the places of the clefs be: And for any scale of a certain extent, the rule is, that the mean clef *c* be taken as near the middle of the scale as possible, and then the clef *g* a 5th above, and *f* a 5th below, as it is in the present general system of four 8ves and a 6th, represented in the scheme, and actually determined upon harpsichords.

In the last place consider, that since the lines and spaces of the scale, with the degrees stated among them by the letters, sufficiently determine how far any note is distant from another, therefore there is no need of different characters of letters, as would be if the scale were only expressed by these letters: And when we speak of any note of the scale, naming it by *a* or *b*, &c. we may explain what part of the scale it is in, either by numbring the 8ves from the lowest note, and calling the note spoken of (for example) *c* in the lowest 8ve or in the 2d 8ve, and so on: Or, we may determine its place by a reference to the seat of any of the three signed clefs; and so we may say of any note, as *f* or *g*, that it is such a clef note, or the first or second, &c. *f* or *g* above such a clef. Take this application, suppose you ask me what is the highest note of my voice? If I say *d*, you are not the wiser by this answer, till I determine it by saying it is *d* in the fourth octave, or the first *d* above the treble clef. But again, neither this question nor the answer is sufficiently determined, unless it have a reference to some supposed pitch of tune in a certain fixt instrument, as the ordinary Consort Pitch of a harpsichord, because, as I have frequently said, the scale of music is concerned only with the relation of notes and the order of degrees, which are still the same in all differences of tune, in the whole series.

Of the REASON, USE, and variety of the SIGNATURES of CLEFS.

I Have already said, that the natural and artificial Note expressed by the same letter, as *c* and *c**, are both set on the same line or space. When there is no * or *b* marked on any line or space, at the beginning with the clef, then all the notes are natural; and if in any particular place of the song, the artificial note is required, 'tis signified by the sign * or *b*, set upon the line a space before that note; but if a

♯ or ♭ is set at the beginning in any line or space with the clef, then all the notes on that line or space are the artificial ones, that is, are to be taken a semitone higher or lower than they would be without such a sign; the same affects all their 8ves above or below, tho' they are not marked so. And in the course of the song, if the natural note is sometimes required, it is signified by this mark ♮. And the marking the system at the beginning with sharps or flats, I call the signature of the clef.

In what's said, you have the plain rule for application; but that we may better conceive the reason and use of these signatures, it will be necessary to recollect, and also make a little clearer, what has been explained of the nature of keys or modes, and of the original and use of the sharp and flat notes, I shall explain what a key and mode in music is; and distinguish betwixt these two, and shew that there are and can be but two different modes, the greater and the lesser, according to the two concinnous divisions of the 8ve, viz. by the 3d g. or the 3d l. and their proper accompaniments; and whatever difference you may make in the absolute pitch of the whole notes, or of the first note which limit all the rest, the same individual song must still be in the same mode; and by the key I understand only that pitch or degree of tune at which the fundamental or close note of the melody, and consequently the whole 8ve is taken; and because the fundamental is the principal note of the 8ve which regulates the rest, it is peculiarly called the key. Now as to the variety of keys, if we take the thing in so large a sense as to signify the absolute pitch of tune at which any fundamental note may be taken, the number is at least indefinite; but in practice it is limited, and particularly with respect to the denominations of keys, which are only twelve, viz. the twelve different names or letters of the semitonic scale; so we say the key of a song is *c* or *d*, &c. which signifies that the cadence or close of the melody is upon the note of that name when we speak of any instrument; and with respect to the human voice, that the close note is unison to such a note on an instrument; and generally, with respect both to instruments and voice, the denomination of the key is taken from the place of the close note upon the written music, i. e. the name of the line or space where it stands: Hence we see, that tho' the difference of keys refers to the degree of tune, at which the fundamental, and consequently the whole
8ve

So *c* is taken, in distinction from the mode or constitution of an octave, yet these denominations determine the differences only relatively, with respect to one certain series of fixed sounds, as a scale of notes upon a particular instrument, in which all the notes of different names are different keys, according to the general definition, because of their different degrees of tune; but as the tuning of the whole may be in a different pitch, and the notes taken in the same part of the instrument, are, without respect to the tuning of the whole, still called by the same name *c* or *d*, &c. because they serve only to mark the relation of tune betwixt the notes, therefore 'tis plain, that in practice a song will be said to be in the same key as to the denomination, though the absolute tune be different, and to be in different keys when the absolute tune is the same; as if the note *a* is made the key in one tuning, and in another the note *d* unison to *a* of the former. Now, this is a kind of limitation of the general definition, yet it serves the design best for practice, and indeed cannot be otherwise without infinite confusion. I shall a little below make some more particular remarks upon the denominations of sounds, or notes raised from instruments or the human voice: but from what has been explained, you will easily understand what difference I put betwixt a mode and a key; of modes there are only two, and they respect what I would call the internal constitution of the *Sve*; but keys are indefinite in the more general and abstract sense; and with regard to their denominations in practice they are reduced to twelve, and have respect to a circumstance that is external and accidental to the mode; and therefore a key may be changed under the same mode, as when the same song, which is always in the same mode, is taken up at different notes or degrees of tune; and from the same fundamental or key a series may proceed in a different mode, as when different songs begin in the same note. But then because common use applies the word key in both senses, i. e. both to what I call a key and a mode, to prevent ambiguity the word sharp or flat ought to be added when we would express the mode; so that a sharp key is the same as the greater mode, and a flat key a lesser mode; and when we would express both mode and key, we join the name of the key note, thus, we may say such a song is for example in the sharp or flat key *c*, to signify that the fundamental note in which the close is made is the note called *c* on the instrument, or unison to it in the voice; or gene-

rally, that it is set on the line or space of that name in writing; and that the 3d *g*, or 3d *l*, is used in the melody, while the song keeps within that key; for I have also observed, that the same song may be carried through different keys, or make successive cadences in different notes, which is commonly ordered by bringing in some note that is none of the natural notes of the former key, of which more immediately: But when we hear of any key denominated *c* or *d* without the word sharp or flat, then we can understand nothing but what I have called the key in distinction from the mode, i. e. that the cadence is made in such a note, $\div| \div$.

Again, I shall explain the use of the notes we call sharp and flat, or artificial notes, and the distinction of keys in that respect into natural and artificial, and shew that they are necessary for correcting the defects of instruments having fixt sounds, that beginning at any note we may have a true concinnous diatonick series from that note, which in a scale of fixt degrees in the *Sve* we cannot have, all the orders of degrees proceeding from each of the seven natural notes being different, of which only two are concinnous, viz. from *c* which makes a sharp key, and from *a* which makes a flat key; and to apply this more particularly, you must understand the use of these sharp or flat notes to be this, that a song, which, being set in a natural key, or without sharps and flats, is either too high or too low, may be transposed or set in another more convenient key, which necessarily brings in some of the artificial notes, in order to make a diatonick series from this new key, like that from the other; and when the song changes the key before it comes to the final close, though the principal be natural, yet some of these into which it changes may require artificial notes, which are the essential and natural notes of this new key; for though this be called an artificial key, it is only so with respect to the names of the notes in the fixt system, which are still natural with respect to their proper fundamental, viz. the key into which the piece is transposed, or into which it changes where the principal key is natural.

And even with respect to the human voice, which is under no limitation, I have shewn the necessity of these names, for the sake of a regular, distinct and easy representation of sounds, for directing the voice in performance. I shall next more particularly explain by some examples, the business of keeping in and going out of keys. Example. Suppose a song begins in *c*, or at least makes the first circle in it; if all the
notes

notes preceding that close are in true musical relation to *c* as a fundamental in one species, suppose as a sharp key, i. e. with a 3d *g*, the melody has been still in that key. But if proceeding, the composer brings in the note *f**, he leads the melody out of the former key, because *f** is none of the natural notes of the 8ve *c*, being a false 4th to *c*. Again he may lead it out of the key without any false note, by bringing in one that belongs not to the species in which the melody was begun. Suppose after beginning in the sharp key *c*, he introduces the note *g**, which is a flat 6th, or an extreme sharp 5th to *c*, and therefore harmonious, yet it belongs to it as a flat key, and consequently is out of the key as a sharp one. And because the same song cannot with any good effect be made to close twice in the same note in a different species, therefore after introducing the note *g**, the next close must be in some other note as *a*, and then the key in both senses will be changed, because *a* has naturally a 3d *b*; and therefore when any note is said to be out of a key, it is understood to be out of it either as making a false interval, or as belonging to it in another species than a supposed one, i. e. if it belong to it as a sharp key, it is out of it as a flat one; the first close is in *a* as a sharp key, all the preceding notes being natural to it as such; then proceeding in the same key, you see *g* (natural) introduced, which belongs not to *a* as a sharp key, and also *a**, which is quite out of the former key. By these notes a close is brought on in *b*, and the melody is said to be out of the first key, and is so in both senses of the word key; then the melody is carried on to a close in *d*, which is a third key, and with respect to that piece is indeed the principal key, in which also the piece begins; but I shall consider this again; it was enough to my purpose here, that all the notes from the beginning to the first close in *a* were natural to the octave from *a* with a 3d; and tho' the 3d above the close is not used, yet the 6th below it is used; which is the same thing in determining the species.

I return now to explain the reason and use of the signatures of clefs. And first, Let us suppose any piece of melody confined strictly to one mode or key, and let that be the natural sharp key *c*, from which as the relation of the letters are determined in the scale, there is a true musical series and gradation of notes, and therefore it requires no * or b, consequently the signature of the clef must be plain. But let the piece be transposed to the key *d*, it must necessarily take *f* *

instead of f , and c^* for c , because f^* is the true 3d, and c^* the true 7th to d . Now if the clef be not signed with a $*$ on the feat of f and c , we must supply it wherever these notes occur through the piece; but it is much better that they should be marked once for all at the beginning.

Again, suppose a piece of melody, in which there is a change of the key or mode; if the same signature answer all these keys, there is no more question about it; but if that cannot be, then the signature ought to be adjusted to the principal key, rather than to any other; it demands f^* and c^* for its 3d and 7th, therefore the signature expresseth them. The piece actually begins in the principal key, though the first close is made in the 5th above, viz. in a , by bringing in g^* ; which is very naturally managed, because all the notes from the beginning to that close belong to both the sharp keys d and a , except that g^* which is the only note in which they can differ: then you see the melody proceeds for some time in notes that are common to both these keys, though indeed the impression of the last cadence will be strongest; and then by bringing g (natural) and a^* , it leaves both the former keys to close in b ; and here again there is as great a coincidence with the principal key as possible, for the flat key b has every one of its essential notes common with some one of these of the sharp key d , except a^* and g^* which that flat key may occasionally make use of.

To proceed with our signatures, you have, in what is said the true use and reason of the signatures of clefs; in respect of which they are distinguished into natural, and artificial or transposed clefs; the first is when no $*$ or b is set at the beginning; and when there are, it is said to be transposed. We shall next consider the variety of signatures of clefs, which in all are about twelve, and the most reasonable way of making the artificial notes, either in the general signature, or where they occur upon the change of the key.

In the semitonic scale there are twelve different notes in an octave (for the 13th is the same with the 1st) each of which may be made the fundamental or key of a song, i. e. from each of them we can take a series of notes, that shall proceed concinnously by seven diatonick degrees of tones and semitones to an octave, in the species either of a sharp or flat key, or of a greater or lesser mode (the small errors of this scale as it is fixt upon instruments, being in all this matter neglected.) Now, making each of these twelve letters or
notes

notes a fundamental or key-note, there must be in the compass of an octave from each, more or fewer, or different sharps and flats necessarily taken in to make a concinnous series of the same species, i. e. proceeding by the greater or lesser 3d (for these specify the mode, and determine the other differences); and since from every one of the twelve keys we may proceed concinnously, either with a greater or lesser 3d, and their accompanyments, it appears at first sight, that there must be twenty-four different signatures of clefs, but you will easily understand that there are but twelve; for the same signature serves two different keys, whereof the one is a sharp and the other a flat key, as you see plainly in the nature of the diatonick scale, in which the octave from *c* proceeds concinnously by a 3d, and that from *a* (which is a 6th above, or a 3d below *c*) by a 3d with the 6th and 7th for its accompanyments, which I suppose here essential to all flat keys; consequently, if we begin at any other letter, and by the use of * or *b* make a concinnous diatonick series of either kind, we shall have in the same series, continued from the 6th above or 3d below, an octave of the other species; therefore there can be but twelve different signatures of clefs, whereof one is plain or natural, and eleven transposed or artificial.

What the proper notes of these transposed clefs are, you may find thus; let the scale of semitones be continued to two octaves, then begin at every letter, and, reckoning two semitones to every tone, take two tones and one semitone, then three tones and one semitone, which is the order of a sharp key, or of the natural octave from *c*, the letters which terminate these tones and semitones, are the essential or natural notes of the key or octave, whose fundamental is the letter or note you begin at. By this you will find the notes belonging to every sharp key; and these being continued, you will also have the notes belonging to every flat key, by taking the 6th above the sharp key for the fundamental of the flat.

With respect to the names and signatures, there remain some things to be explained. I have told you that upon the main it was an indifferent thing, whether the artificial notes in the scale were named from the note below with a *, or from that above with a *b*. You have each of them marked, in some signatures *, and in others *b*; but in every particular signature the marks are all of one kind, * or *b*, though one signature is *, and another *b*; and these are not so ordered at random; the reason I shall explain to you. In the first place

place there is a greater harmony with respect to the eye ; but this is a small matter, a better reason follows. Consider, every letter has two powers, i. e. is capable of representing two notes, according as you take it natural or plain, as *c*, *d*, &c. or transposed as *c* * or *d* b ; again, every line and space is the seat of one particular letter. Now if we take two powers of one letter in the same octave or key, the line or space to which it belongs must have two different signs ; and then when a note is set upon that line or space, how shall it be known whether it is to be taken natural or transposed ? This can only be done by setting the proper signs at every such note ; which is not only troublesome, but renders the general signature useless as to that line or space. This is the reason why some signatures are made * rather than b, and contrarily ; for example, take for the fundamental *c* *, the rest of the notes to make a sharp key are *d* *, *f* : *f* *, *g* *, *a* *, *c*, where you see *f* and *c* are taken both natural and transposed, which we avoid by making all the artificial note b ; thus *d* b, *e* b, *f* : *g* b, *a* b, b, *c*, *d* b. 'Tis true that this might be helped another way, viz. by taking all the notes *, i. e. taking *e* * for *f*, and *b* * for *c* ; but the inconveniency of this is visible, for hereby we force two natural notes out of their places, whereby the difficulty of performing by such direction is increased. In the other cases where I have marked all b rather than *, the same reasons obtain. And in some cases, some ways of signing with a * would have both these inconveniencies. The same reasons make it necessary to have some signature * rather than b ; but the octave beginning in *g* b is singular in this respect, that it is equal which way it is signed, for in both there will be one natural note displaced unavoidably ; *b* natural is signed *c* b, and if you make all the signs *, you must either take in two powers of one letter, or take *e* * for *f*. Now neither in this, nor any of the other cases will the mixing of the signs remove the inconveniencies ; and suppose it could, another follows upon the mixture, which leads me to shew why the same clef is either all * or all b, the reason follows.

The quantity of an interval express'd by notes set upon lines and spaces marked some *, some b, will not be so easily discovered, as when they are all marked one way, because the number of intermediate degrees from line to space, and from space to line, answers not to the denomination of the interval ; for example, if it is a 5th, I shall more readily discover
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it when there are five intermediate degrees from line to space, than if there were but four; thus, from *g* sharp to *d* sharp is a 5th, and will appear as such by the degrees, among the lines and spaces; but if we mark it *g* sharp, *e* b, it will have the appearance of a 4th; also from *f* sharp to *a* sharp is a 3d, and appears so, whereas from *f* sharp to *b* looks like a 4th; and for that reason Mr. Simpson in his Compendium of Music calls it a lesser 4th, which I think he had better called it an apparent 4th; and so by making the signs of the cliff all of one kind, this inconveniency is saved with respect to all intervals, whose both extremes have a transposed letter; and as to such intervals which have one extreme a natural note, or express by a plain letter, and the other transposed, the inconveniency is prevented by the choice of the * in some keys, and of the b in others; for example, from *d* to *f* sharp is a 3d, equal to that from *d* to *g* b, but the first only appears like a 3d, the latter a 4th, and so of other intervals from *d*. Again from *f* to *b* b, or *f* to *a* sharp is a 4th, but the first is the best way of marking it; there are no more transposed notes in that octave, nor any other octave, whose fundamental is a natural note, that is marked with b.

It must be owned, after all, that whatever way we chuse the signs of transposed notes, the sounds or notes themselves on an instrument are individually the same; and marking them one way rather than another, respects only the conveniencies of representing them to the eye, which ought not to be neglected; especially for the direction of the human voice, because that having no fixt sounds (as an instrument has, whose notes may be found by a local memory of their seat on the instrument) we have not another way of finding the true note but computing the interval by the intermediate diatonic degrees, and the more readily this can be done, it is certainly the better.

Now you are to observe, that, as the signature of the clef is designed for, and can serve but one key, which ought rather to be the principal key or octave of the piece than any other, shewing what transposed notes belong to it, so the inconveniency last mentioned is remedied, by having the signs all of one kind, only for these intervals one of whose extremes is the key-note, or letter. But a song may modulate or change from the principal into other keys, which may require other notes than the signature of the clef affords; so we find sharp and b upon some particular notes contrary to

the clef, which shews that the melody is out of the principal key, such notes being natural to some other subprincipal key into which it is carried; and these signs are, or ought always to be chosen in the most convenient manner for expressing the interval; for example, the principal key being *c* with a 3d greater, which is a natural octave (i. e. expressed all with plain letters) suppose a change into its 4th *f*; and here let a 4th upward be required, we must take it in *b* or *a* sharp; the first is the best way, but either of them contradicts the clef which is natural; and we no sooner find this than we judge the key is changed. But again, a change may be where this sign of it cannot appear, viz. when we modulate into the 6th of a sharp principal key, or into the 3d of a flat principal key, because these have the same signature, as has been already shewn, and have such a connection, that, unless by a cadence, the melody can never be said to be out of the principal key. And with respect to a flat principal key, observe, that if the 6th *g.* and 7th *g.* are used, as in some circumstances they may, especially towards a cadence, then there will be necessarily required upon that 6th and 7th, another sign than that with which its seat is marked in the general signature of the clef, which marks all flat keys with the lesser 6ths and 7ths; and therefore in such case (i. e. where the principal key is flat) this difference from the clef is not a sign that the melody leaves the key, because each of these belong to it in different circumstances; yet they cannot be both marked in the clef, therefore that which is of more general use is put there, and the other marked occasionally.

From what has been explained, you learn another very remarkable thing, viz. to know what the principal key of any piece is, without seeing one note of it; and this is done by knowing the signature of the clef. There are but two kinds of keys (or modes of melody) distinguished into sharp and flat, as already explained; each of which may have any of the 12 different notes or letters of the semitonic scale for its fundamental; in the 1st and 6th line of the upper part of the preceding table you have all these fundamentals or key-notes, and under them respectively stand the signatures proper to each, in which, as has been often said, the flat keys have their 6th and 7th marked of the lesser kind; and therefore as by the key, or fundamental note, we know the signature, so reciprocally by the signature we can know the key; but

'tis under this one limitation that, because one signature serves two keys, a sharp one, and a flat, which is the 6th above or 3d below the sharp one, therefore we only learn by this, that it is one of them, but not which; for example, if the clef has no transposed note but *f* ✱, then the key is *g* with a 3d greater, or *e* with a 3d lesser. If the clef has *b* and *e* *b*, the key is *b* with a 3d greater, or *g* with a 3d lesser, and so of others, as in the table: I know indeed, for I have found it so in the writings of the best masters, that they are not strict and constant in observing this rule concerning the signature of the clef, especially when the principal key is a flat one; in which case you'll find frequently, that when the 6th lesser or 7th lesser to the key, or both, are transposed notes, they don't sign them so in the clef, but leave them to be marked as the course of the melody requires; which is convenient enough when the piece is so conducted as to use the lesser 6th and 7th seldomer than the greater.

Of the NAME, with the various DEFINITIONS and DIVISIONS of the SCIENCE.

THE word Music comes to us from the Latin word *Musica*, if not immediately from a Greek word of the same sound, from whence the Romans probably took theirs; for they got much of their learning from the Greeks. Our criticks teach us, that it comes from the word *Musa*, and this from a Greek word which signifies to search or find out, because the Muses were feigned to be inventresses of the sciences, and particularly of poetry and those modulations of sound that constitute music. But others go higher, and tell us, the word *Musa* comes from a Hebrew word, which signifies art or discipline; hence *Musa* and *Musica* antiently signified learning in general, or any kind of science; in which sense you'll find it frequently in the works of the ancient philosophers. But Kircher will have it from an Egyptian word; because the restoration of it after the flood was probably there, by reason of the many reeds to be found in their fens, and upon the banks of the Nile. Hesychius tells us, that the Athenians gave the name of music to every art. From this it was that the Poets and Mytholo-

gifts feigned the nine Muses daughters of Jupiter, w^{ho} invented the sciences, and presided over them, to assist and inspire those who apply to study them, each having her particular province. In this general sense we have it defin'd to be the orderly arrangement and right disposition of things ; in short, the agreement and harmony of the whole with its parts, and of the parts among themselves. Hermes Trismegistus says, That music is nothing but the knowledge of the order of all things ; which was also the doctrine of the Pythagorean school, and of the Platonicks, who teach that every thing in the universe is music. Agreeable to this wide sense, some have distinguished music into divine and mundane ; the first respects the order and harmony that obtains among the celestial minds ; the other respects the relations and order of every thing else in the universe. But Plato by the divine music understands, that which exists in the divine mind, viz. these archetypal ideas of order and symmetry, according to which God formed all things ; and as this order exists in the creatures, it is called mundane music : Which is again subdivided, the remarkable denominations of which are, First, Elementary or the harmony of the first elements of things ; and these, according to the philosophers, are fire, air, water, and earth, which tho' seemingly contrary to one another, are, by the wisdom of the Creator, united and compounded in all the beautiful and regular forms of things that fall under our senses. 2d. Celestial, comprehending the order and proportions in the magnitudes, distances, and motions of the heavenly bodies, and the harmony of the sounds proceeding from these motions : For the Pythagoreans affirmed that they produce the most perfect consort ; the argument, as Macrobius in his commentary on Cicero's *Somnium Scipionis* has it, is to this purpose, viz. Sound is the effect of motion, and since the heavenly bodies must be under certain regular and stated laws of motion, they must produce something musical and concordant ; for from random and fortuitous motions, governed by no certain measure, can only proceed a grating and unpleasant noise : And the reason, says he, why we are not sensible of that sound, is the vastness of it, which exceeds our sense of hearing ; in the same manner as the inhabitants near the cataracts of the Nile are insensible
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of their prodigious noise. But some of the historians, if I remember right, tell us that by the excessiveness of the sounds, these people are rendered quite deaf, which makes that demonstration somewhat doubtful, since we hear every other sound that reaches to us. Others alledge that the sounds of the spheres, being the first we hear when we come into the world, and being habituated to them for a long time, when we could scarcely think or make reflection on any thing, we become incapable of perceiving them afterwards. But Pythagoras said he perceived and understood the celestial harmony by a peculiar favour of that spirit to whom he owed his life, as Iamblichus reports of him, who says, That tho' he never sung or played on any instrument himself, yet by an inconceivable sort of divinity, he taught others to imitate the celestial music of the spheres, by instruments and voice: For according to him, all the harmony of sounds here below, is but an imitation, and that imperfect too, of the other. This species is by some called particu'arly the mundane music 3d. Human, which consists chiefly in the harmony of the faculties of the human soul, and its various passions; and is also considered in the proportion and temperament, mutual dependence and connection, of all the parts of this wonderful machine of our bodies. 4th. Is what in a more limited and peculiar sense of the word was called music; which has for its object motion, considered as under certain regular measures and proportions, by which it affects the senses in an agreeable manner. All motion belongs to bodies, and sound is the effect of motion, and cannot be without it; but all motion does not produce sound, therefore this was again subdivided. Where the motion is without sound, or as it is only the object of seeing, it was called *musica orchestria* or *saltatoria*, which contains the rules for the regular motions of dancing; also *Hypocritica*, which respects the motions and gestures of the Pantomimes. When motion is perceived only by the ear, i. e. when sound is the object of music, there are three species; *Harmonica*, which considers the differences and proportion of sounds, with respect to acute and grave; *Rythmica*, which respects the proportion of sounds as to time, or the swiftness and slowness of their successions; and *Metrica*, which belongs properly to the poets, and respects the versifying

art: But in common acceptation 'tis now more limited, and we call nothing music but what is heard; and even then we make a variety of tones necessary to the being of music.

Aristides Quintilianus, who writes a profest treatise upon music, calls it the knowledge of singing, and of the things that are joined with singing (*ἐπιστήμη μέλος καὶ τὰ πρὸς μέλος συμβαίνοντων*, which Meibomius translates, *scientia cantus, eorumquæ circa cantum contingunt*) and theſe he calls the motions of the voice and body, as if the cantus itſelf conſiſted only in the different tones of the voice. Bacchius, who wrote a ſhort introduction to music in queſtion and anſwer, gives the ſame definition. Afterwards, Ariſtides conſiders music in the largeſt ſenſe of the word, and divides it into contemplative and active. The firſt, he ſays, is either natural or artificial; the natural is arithmetical, becauſe it conſiders the proportion of numbers; or phyſical, which diſputes of every thing in nature; the artificial is divided into Harmonica, Rythmica (comprehending the dumb motions) and Metrica: The active, which is the application of the artificial, is either enunciative (as in oratory,) organical (or inſtrumental performance,) Odical (for voice and ſinging of poems,) Hypocritical (in the motions of the pantomimes.) To what purpoſe ſome add hydraulic I do not underſtand, for this is but a ſpecies of the organical, in which water is ſome way uſed for producing or modifying the ſound. The muſical faculties, as they call them, are, melopœia, which gives rules for the tones of the voice or inſtrument, rythmopœia for motions, and poëſis for making of verſe. Again, explaining the difference of Rythmus and Metrum, he tells us, That Rythmus is applied three ways; either to immoveable bodies, which are called eurythmoi, when their parts are rightly proportioned to one another, as a well made ſtatue; or to every thing that moves, ſo we ſay a man walks handſomely (compoſite,) and under this dancing will come the buſineſs of the pantomimes; or particularly to the motion of ſound or the voice, in which the rythmus conſiſts of long and ſhort ſyllables or notes, (which he calls times) joined together (in ſucceſſion) in ſome kind of order, ſo that their cadence upon the ear may be agreeable; which conſtitutes in oratory what is called a numerous ſtile,
and

and when the tones of the voice are well chosen 'tis an harmonious stile. Rythmus is perceived either by the eye or the ear, and is something general, which may be without metrum; but this is perceived only by the ear, and is but a species of the other, and cannot exist without it: The first is perceived without sound in dancing; and when it exists with sounds it may either be without any difference of acute and grave, as in a drum, or with a variety of these, as in a song, and then the harmonica and rythmica are joined; and if any poem is set to music, and sung with a variety of tones, we have all the three parts of music at once. Porphyrius in his commentaries on Ptolemy's Harmonicks, institutes the division of music another way; he takes it in the limited sense, as having motion both dumb and sonorous for its object; and, without distinguishing the speculative and practical, he makes its parts these six, viz. Harmonica, Rythmica, Metrica, Organica, Poetica, Hypocritica; he applies the Rythmica to dancing, Metrica to the enunciative, and Poetica to verses.

All the other antient Authors agree in the same three-fold division of music into Harmonica, Rythmica, and Metrica: Some add the Organica, others omit it, as indeed it is but an accidental thing to music, in what species of sounds it is exprest. Upon this division of music, the more ancient writers are very careful in the inscription or titles of their books, and call them only Harmonica, when they confine themselves to that part, as Aristoxenus, Euclid, Nicomachus, Gaudentius, Ptolemy, Bryennius; but Aristides and Bacchius call theirs musica, because they profess to treat of all the parts. The Latins are not always so accurate, for they inscribe all theirs musica, as Boethius, tho' he only explains the harmonica; and St. Augustin, tho' his six books de musica speak only of the rythmus and metrum; Martianus Capella has a better right to the title, for he makes a kind of compend and translation of Aristides Quintilian, tho' a very obscure one of as obscure an original. Aurelius Cassiodorus needs scarcely be named, for tho' he writes a book de musica, 'tis but barely some general definitions and divisions of the science.

The harmonica is the part the antients have left us any tolerable account of, which is at best but very general

neral and theoretical ; such as it is, I purpose to explain it to you as distinctly as I can ; but having thus settled the definition and division of music as delivered by the antients, I chuse next to consider it historically.

The Invention and Antiquity of Music, with the Excellency of the Art in the various Ends and Uses of it.

OF all human arts music has justest pretences to the honour of antiquity : We scarce need any authority for this assertion ; the reason of the thing demonstrates it, for the conditions and circumstances of human life required some powerful charm, to bear up the mind under the anxiety and cares that mankind soon after his creation became subject to ; and the goodness of our blessed Creator soon discovered itself in the wonderful relief that music affords against the unavoidable hardships which are annexed to our state of being in this life ; so that music must have been as early in the world as the most necessary and indispensable arts. For

If we consider how natural to the mind of man this kind of pleasure is, as constant and universal experience sufficiently proves, we cannot think he was long a stranger to it. Other arts were revealed as bare necessity gave occasion, and some were afterwards owing to luxury ; but neither necessity nor luxury are the parents of this heavenly art ; to be pleased with it seems to be a part of our constitution ; but 'tis made so, not as absolutely necessary to our being, 'tis a gift of God to us for our more happy and comfortable being ; and therefore we can make no doubt that this art was among the very first that were known to men. It is reasonable to believe, that as all other arts, so this was rude and simple in its beginning, and by the industry of man, prompted by his natural love of pleasure, improved by degrees. If we consider, again, how obvious a thing sound is, and how manifold occasions it gives for invention, we are not only further confirmed in the antiquity of this art, but we can make very shrewd guesses about the first discoveries of it. Vocal music was certainly the first kind ; man had not only the various tones of his own voice to make his observations upon, before any other
arts

arts or instruments were found, but being daily entertained by the various natural strains of the winged choirs, how could he not observe them, and from thence take occasion to improve his own voice, and the modulations of sound, of which it is capable? 'Tis certain that whatever these singers were capable of, they possess it actually from the beginning of the world; we are surprised indeed with their sagacious imitations of human art in singing, but we know no improvements the species is capable of; and if we suppose that in these parts where mankind first appeared, and especially in these first days, when things were probably in their greatest beauty and perfection, the singing of birds was a more remarkable thing, we shall have less reason to doubt that they led the way to mankind in this charming art: But this is no new opinion; of many antient authors, who agree in this very just conjecture, I shall only let you hear Lucretius Lib. 5.

At liquidas avium voces imitauer ore
Ante fuit multo, quam lævia carmina cantu
Concelebrare homines possent, aureisque juvare.

The first invention of wind-instruments he ascribes to the observation of the whistling of the winds among the hollow reeds.

Et zephyri cava per calamorum fibila primum
Agresteis docuere cavas inflare cicutas,
Inde minutatim dulceis didicere querelas,
Tibia quas fundit digitis pulsata canentum.

or they might also take that hint from something that might happen accidentally to them in their handling of corn-stalks, or the hollow stems of other plants. And other kinds of instruments were probably formed by such like accidents: There were so many uses for chords or strings, that men could not but very soon observe their various sounds, which might give rise to stringed instruments: And for the pulsatile instruments, as drums and cymbals, they might arise from the observation of the hollow noise of concave bodies. To make this account of the invention of instruments more probable, Kircher bids us consider, That the first mortals living a pastoral life, and being constantly in the fields, near rivers and among woods, could not be perpetually idle; 'tis probable therefore, says he, That the invention of pipes
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and whistles was owing to their diversions and exercises on these occasions ; and because men could not be long without having use for chords of various kinds, and variously bent, these, either by being exposed to the wind, or necessarily touched by the hand, might give the first hint of stringed instruments ; and because, even in the first simple way of living, they could not be long without some fabril arts, this would give occasion to observe various sounds of hard and hollow bodies, which might raise the first thought of the pulsatile instruments ; hence he concludes that music was among the first arts.

If we consider next, the opinion of those that are antients to us, who yet were too far from the beginning of things to know them any other way than by tradition and probable conjecture ; we find an universal agreement in this truth, That music is as ancient as the world itself, for this very reason, that it is natural to mankind. It will be needless to bring many authorities, one or two shall serve : Plutarch in his treatise of music, which is nothing but a conversation among friends, about the invention, antiquity and power of music, makes one ascribe the invention to Amphion the son of Jupiter and Antiope, who was taught by his father ; but in the naming of another he makes Apollo the author, and to prove it, alledges all the antient statues of this god, in whose hand a musical instrument was always put. He adduces many examples to prove the natural influence music has upon the mind of man, and since he makes no less than a god the inventor of it, and the gods existed before men, 'tis certain he means to prove, both by tradition and the nature of the thing, that it is the most ancient as well as the most noble science. Quintilian (lib. 1. cap 11.) alledges the authority of Timagenes to prove that music is of all the most ancient science ; and he thinks the tradition of its antiquity is sufficiently proved by the ancient poets, who represent musicians at the table of kings, singing the praises of the gods and heroes. Homer shews us how far music was advanced in his days, and the tradition of its yet greater antiquity, while he says it was a part of his Hero's education. The opinion of the divine original and antiquity of music, is also proved by the fables of the muses, so universal among the poets ; and by
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the disputes among the Greek writers concerning the first authors, some for Orpheus, some for Amphion, some for Appollo, &c. As the best of the philosophers owned the providence of the gods, and their particular love and benevolence to mankind, so they also believed that music was from the beginning a peculiar gift and favour of heaven; and no wonder, when they looked upon it as necessary to assist the mind to a raised and exalted way of praising the gods and good men.

I shall add but one testimony more, which is that of the sacred writings, where Jubal the sixth from Adam, is called the “father of such as handle the harp and organ;” whether this signifies that he was the inventor, or one who brought these instruments to a good perfection, or only one who was eminently skilled in the performance, we have sufficient reason to believe that music was an art long before his time; since it is rational to think that vocal music was known long before instrumental, and that there was a gradual improvement in the art of modulating the voice; unless Adam and his sons were inspired with this knowledge, which supposition would prove the point at once. And if we could believe that this art was lost by the flood, yet the same nature remaining in man, it would soon have been recovered; and we find a notable instance of it in the song of praise which the Israelites raised with their voices and timbrels to God, for their deliverance at the Red Sea; from which we may reasonably conjecture it was an art well known, and of established honour long before that time.

It may be expected in this place, that there should be given a more particular history of the inventor of music and musical instruments, and other famous musicians since the flood. As to the invention, there is enough said already to show that music is natural to mankind; and therefore instead of inventors, the enquiry ought properly to be about the improvers of it; and it would come in very naturally here: but the truth is, we have scarce any thing left as we can depend upon in this matter; or at least we have but very general hints, and many of them contrary to each other, from authors that speak of these things in a transient manner: and as we have no writings of the age in which music was first restored after the flood, so the accounts we have are such uncertain traditions, that no two authors agree in every thing. Greece was the country in Europe where learning first flourished;

and though we believe they drew from other fountains, as Egypt, and the more eastern parts, yet they are the fountains to us, and to all the western world: other antiquities we neither know so well, nor so much of, at least of such as have any pretence to a greater antiquity, except the Jewish; and though we are sure they had music, yet we have no account of the inventors among them, for it is probable they learned it in Egypt; and therefore this enquiry about the inventors of music since the flood must be limited to Greece. Plutarch, Julius Polux, Atheneus, and a few more, are the authorities we have principally to trust to, who take what they say from other more ancient authors of their tradition.

Amphion the Theban, is by some reckoned the most ancient musician in Greece, and the inventor of it, as also of the lyre. Some say Mercury taught him and gave him a lyre of seven strings. He is said to be the first who taught to play and sing together. The time he lived in is not agreed upon.

Chiron the Pelithronian, reckoned a demigod, the son of Saturn and Phyllira, is the next great master; the inventor of medicine, a famous philosopher and musician, who had for his scholars Æsculapius, Jason, Hercules, Theseus, Achilles, and other heroes.

Demodocus is another celebrated musician, of whom already.

Hermes, or Mercury Trismigistus, another demigod, is also reckoned amongst the inventors or improvers of music and of the lyre.

Linus was a famous poet and musician, some say he taught Hercules, Thamyris and Orpheus, and even Amphion. To him some ascribe the invention of the lyre.

Olympus the Mysian, is another benefactor to music; he was the disciple of Marsyas the son of Hyagnis the Phrygian; this Hyagnis is reckoned the inventor of the tibia, which others ascribe to the muse Euterpe, as Horace insinuates, "*Sinaeque tibia Euterpe cohibet.*"

Orpheus the Thracian, is also reckoned the author, or at least the introducer of various arts into Greece, among which is music; he practised the lyre he got from Mercury. Some say he was master to Thamyris and Linus.

Phemius of Ithaca. Ovid uses his name for any excellent musician: Homer also names him honourably.

Terpander the Lesbian, lived in the time of Lycurgus, and set his laws to music. He was the first who among the Spartans applied melody to poems, or taught them to be sung in regular measures. This is the famous musician who quelled a sedition at Sparta by his music. He and his followers as said to have first instituted the musical mode, used in singing hymns to the gods; and some attribute the invention of the lyre to him.

Thales the Cretan was another great master, honourably entertained by the Lacedemonians for instructing their youth. Of the wonders he wrought by his music, we shall hear again.

Thamyris the Thracian was so famous, that he is feigned to have contended with the muses, upon condition he should possess all their power if he overcame, but if they were victors he consented to lose what they pleased; and being defeated, they put out his eyes, spoiled his voice, and struck him with madness. He was the first who used instrumental music without singing.

These are the remarkable names of musicians before Homer's time, who himself was a musician, as was the famous poet Pinda. You may find the characters of these mentioned at more large, in the first book of *Fabritius's Bibliotheca Græca*,

We find others of a latter date, who were famous in music, as Lasus Hermionensis, Melanippides, Philoxenus, Timotheus, Phrynnis, Epigonius, Lyfander, Simmicus, Diodorous the Theban; who were authors of a great variety and luxurious improvements in music. Lasus, who lived in the time of Darius Hyftaspes, is reckoned the first who ever wrote a treatise upon music. Epigonius was the author of an instrument called epigonium, of 40 strings, he introduced playing on the lyre with the hand without a plectrum, and was the first who joined the Cithara and Tibia in one concert, altering the simplicity of the more ancient music; as Lyfander did by adding a great many strings to the Cythara. Simmicus also invented an instrument called simmicicum of 35 strings. Diodorus improved the tibia, which at first had but four holes, by contriving more holes and notes.

Timotheus, for adding a string to his lyre was fined by the Lacedemonians, and the string ordered to be taken away. Of him and Phrynnis, the comic poet Pherecrates

makes bitter complaints in the name of music, for corrupting and abusing her, as Plutarch reports; for, among others, they chiefly had completed the ruin of the ancient simple music, which says Plutarch, was nobly useful in the education and forming of youth, and the service of the temples, and used principally to these purposes, in the ancient times of greatest wisdom and virtue, but was ruined after theatrical shews came to be so much in fashion, so that scarcely the memory of these ancient modes remained in his time. You shall have some account afterwards of the ancient writers of music.

As we have but uncertain accounts of the inventors of musical instruments among the ancients, so we have as imperfect an account of what these instruments were, scarce knowing them any more than by name. The general division of instruments, is into stringed instruments, wind instruments and the pulsatile kind; of this last we hear of the tympanum or cymbalum, of the nature of our drum; the Greeks gave it the last name from its figure, resembling a boat.

There were also the crepitaculum, tintinabulum, crotalum sistrum; but by any accounts we have, they look rather like childrens rattles and play things than musical instruments.

Of wind-instruments, we hear of the tibia, so called from the shank-bone of some animals, as cranes, of which they were first made. And fistula made also of reeds. But these were afterwards made of wood and also of metal. How they were blown, whether as flutes or hautboys or otherwise, and which the one way, and which the other, is not sufficiently manifest. It is plain some had holes, which at first were but few, and afterwards increased to a greater number; some had none; some were single pipes, and some a combination of severals, particularly Pan's syringa, which consisted of seven reeds joined together side-ways; they had no holes, each giving but one note, in all seven distinct notes, but at what mutual distances is not very certain, though perhaps they were the notes of the natural or diatonic scale, but by this means they would want an 8ve, and therefore probably otherwise constituted. Sometimes they played on a single pipe, sometimes on two together, one in each hand. And lest we should think there could music be expressed by one hand, *Is. Vossius* alleges, they had a contrivance by which they made one hole express several notes, and cites a passage of

Arcadius

Arcadius the grammarian to prove it; that author says indeed, that there were contrivances to shut and open the holes when they had a mind, by pieces of horn he calls Bombyces and Opholmioi (which Julius Pollux also mentions as parts of some kind of tibiae) turning them upwards or downwards, inwards or outwards: but the use of this is not clearly taught us, and whether it was that the same pipe might have more notes than holes, which might be managed by one hand: perhaps it was no more than a like contrivance in our common bagpipes, for tuning the drones to the key of the song. We are also told that Hyagnis contrived the joining of two pipes, so that one canal conveyed wind to both, which therefore were always sounded together.

We hear also of Organs, blown at first by a kind of air-pump, where also water was some way used, and hence called, *organum hydraulicum*; but afterwards they used bellows. Vitruvius, has an obscure description of it, which If. Vossius and Kircher both endeavour to clear.

There were *tubæ*, and *cornua*, and *litui*, of the trumpet kind, of which there were different species invented by different people. They talk of some kind of *tubæ*, that without any art in the modulation, had such a prodigious sound, that was enough to terrify one.

Of stringed instruments, the first is the lyre or cithara (which some distinguish:) Mercury is said to be inventor of it, in this manner; after an inundation of the Nile he found a dead shell-fish, which the Greeks call *chelone*, and the Latins *testudo*; of this shell he made his lyre, mounting it with seven strings, as Lucian says; and added a kind of *jugum* to it, to lengthen the strings, but not such as our violins have, whereby one string contains several notes; by the common form this *jugum* seems no more than two distinct pieces of wood, set parallel, and at some distance, but joined at the farther end, where there is a head to receive pins for stretching the strings. Boethius reports the opinion of some that say, the lyre *mercurii* had but four strings in imitation of the mundane music of the four elements: but Diodorus Siculus says, it had only three strings, in imitation of the three seasons of the year, which were all the ancient Greeks counted. viz. Spring, summer and winter. Nicomachus, Horace, Lucian and others say, it had seven strings in imitation of the seven planets. Some reconcile

Diodorus,

Diodorus, with the last, thus, they say the more ancient lyre had but three or four strings, and Mercury added other three, which made up seven. Mercury gave this seven stringed lyre to Orpheus, who being torn to pieces by the Baccannals, the lyre was hung up in Apollo's temple by the Lesbians: But others say, Pythagorus found it in some temple of Egypt, and added an eighth string. Nicomachus says, Orpheus being killed by the Thracian woman, for contemning their religion in the Bacchanalian rites, his lyre was cast into the sea, and thrown up at Antissa a city of Lesbos; the fishers finding it gave it to Terpander, who carrying it to Egypt, gave it to the priests, and called himself the inventor. Those who call it four stringed, make the proportions thus, betwixt the 1st and 2d, the interval of a 4th, 3: 4, betwixt the 2d and 3d, a tone 8: 9, and betwixt the 3d and 4th string another 4th: the seven strings were diatonically disposed by tones and semitones, and Pythagoras's eighth string made up the octave.

The occasion of ascribing the invention of this instrument to so many authors, is probably, that they have each in different places invented instruments much resembling other. However simple it was at first, it grew to a great number of strings; but it is to no purpose to repeat the names of these who are supposed to have added new strings to it.

From this instrument, which all agree to be first of the stringed kind in Greece, arose a multitude of others, differing in their shape and number of strings, of which we have but indistinct accounts. We hear of the psalterium, trigon, sambuca, pectis, magadis, barbiton, testudo (the two last used by Horace promiscuously with the lyre and cithara) epigonium, simicium, pandura, which were all struck with the hand or a plectrum; but it does not appear that they used any thing like the bows of hair we have now for violins, which is a most noble contrivance for making long and short sounds, and giving them a thousand modifications it is impossible to produce by a plectrum.

Kircher also observes, that in all the ancient monuments, where instruments are put in the hands of Apollo and the muses, as there are many of them at Rome, says he, there is none to be found with such a jujum as our violins have, whereby each string has several notes, but every string has only one note; and this he makes an argument of the simplicity

plicity and imperfection of their instruments. Besides several forms of the lyre kind, and some fistulæ, he is positive they had no instruments worth naming. He considers how careful they were to transmit, by writing and other monuments, their most trifling inventions, that they might not lose the glory of them; and concludes, if they had any thing more perfect, we should certainly have heard of it, and had it preserved, when they were at pains to give us the figure of their trifling reed-pipes, which the shepherds commonly used. But indeed I find some passages that cannot be well understood, without supposing they had instruments in which one string had more than one note: where Pherecrates (already mentioned) makes music complain of her abuses from Timotheus's innovations; she says, he had destroyed her who had twelve harmonies in five strings; whether these harmonies signify single notes or consonances, it is plain each string must afforded more than one note. And Plutarch ascribes to Terpander a lyre of three chords, yet he says it had seven sounds, i. e. notes.

Those who are curious to hear more of this, and see the figures of instruments both ancient and modern, must go to Merfennus and Kircher.

THE EXCELLENCY AND VARIOUS USES OF MUSIC.

THOUGH the reasons alledged for the antiquity of music, shew us the dignity of it, yet I believe it will be agreeable to enter into a more particular history of the honour music was in among the ancients, and of its various ends and uses, and the pretended virtues and powers of it.

The reputation this art was in with the Jewish nation, is, I suppose, well known by the sacred history. Can any thing shew the excellency of an art more, than that it was reckoned useful and necessary in the worship of God; and as such, diligently practised and cultivated by a people separated from the rest of mankind, to be witnesses for the Almighty, and preserve the true knowledge of God upon the earth? I have already mentioned the instance of the Israelites song upon the delivery at the Red-sea, which seems to prove that music both vocal and instrumental, was an approved and stated manner of worshipping God: and we cannot doubt that it was according to his will, for Moses the man
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of God, and Miriam the prophetess, were the chiefs of this sacred choir: and that from this time to that of the royal prophet David, the art was honoured and encouraged by them both publicly and privately, we can make no doubt; for when Saul was troubled with an evil spirit from the Lord, he is advised to call for a cunning player upon the harp, which supposes it was a well known art in that time; and behold, David, yet an obscure and private person, being famous for his skill in music, was called; and upon his playing, "Saul was refreshed and was well, and the evil spirit departed from him." Nor when David was advanced to the kingdom thought he this exercise below him, especially the religious use of it. When the ark was brought from Kirjath-jearim, "David and all Israel played before God with all their might, and with singing, and with harps, and with psalteries, and with timbrels, and with cymbals, and with trumpets," 1 Chron. xiii. 8. And the ark being set up in the city of David, what a solemn service was instituted for the public worship and praise of God; singers and players on all manner of instruments, "to minister before the ark of the Lord continually, to record, and to thank, and praise the Lord God of Israel!" These seem to have been divided into three choirs, and over them appointed three Coragi or masters, Asaph, Heman and Jeduthun, both to instruct them and to preside in the service: but David himself was the chief musician and poet of Israel. And when Solomon had finished the temple, behold, at the dedication of it, "the Levites which were the singers, all of them of Asaph, of Heman, of Jeduthun, having cymbals, and psalteries, and harps, stood at the east-end of the altar, praising and thanking the Lord." And this service, as David had appointed before the ark, continued in the temple; for we are told, that the king and all the people having dedicated the house to God, "The priests waited on their offices; the Levites also with instruments of music of the Lord, which David the king had made to praise the Lord.

The prophet Elisha knew the virtue of music, when he called for a minstrel to compose his mind (as is reasonably supposed) before "the hand of Lord came upon him."

To this I shall add the opinion and testimony of St. Chrysostom, in his commentary on 40th Psalm, he says to this purpose, 'That God knowing Men to be backward and slothful in spiritual things, and impatient of the labour and pains which they require, willing to make the task more agreeable, and pre-

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vent our weariness, he joined melody or music with his worship; that as we are all naturally delighted with harmonious numbers, we might with readiness and cheerfulness of mind express his praise in sacred hymns. For, says he, nothing can raise the mind, and, as it were, give wings to it, free it from earthliness, and the confinement 'tis under by union with the body, inspire it with the love of wisdom, and make every thing pertaining to this life agreeable, as well modulated verse and divine songs harmoniously composed. Our natures are so delighted with music, and we have so great and necessary inclination and tendency to this kind of pleasure, that even infants at the breast are soothed and lulled to rest by this means.' Again he says, 'Because this pleasure is so familiar and connate with our minds, that we might have both profit and pleasure, God appointed psalms, that the Devil might not ruin us with profane and wicked songs.' And tho' there be now some difference of opinion about its use in sacred things, yet all christians keep up the practice of singing hymns and psalms, which is enough to confirm the general principle of music's suitableness to the worship of God.

In St. John's vision, the elders are represented with harps in their hands; and tho' this be only representing things in heaven, in a way easiest for our conception, yet we must suppose it to be a comparison to the best manner of worshipping God among men, with respect at least to the means of composing and raising our minds, or keeping out other ideas, and thereby fitting us for entertaining religious thoughts.

Let us next consider the esteem and use of it among the ancient Greeks and Romans. The glory of this art among them, especially the Greeks, appears first, according to the observation of Quintilian, by the names given to the poets and musicians, which at the beginning were generally the same person, and their characters thought to be so connected, that the names were reciprocal; they were called Sages or Wise men, and the inspired. Salmuth on Pancirollus cites Aristophanes to prove, that by *citharæ callens*, or one that was skilled in playing on the cithara, the ancients meant a wise man, who was adorned with all the graces; as they
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reckoned one who had no ear or genius to music, stupid, or whose frame was disordered, and the elements of his composition at war among themselves. And so high an opinion they had of it, that they thought no industry of man could attain to such an excellent art; and hence they believed this faculty to be an inspiration from the Gods; which also appears particularly by their making Apollo the author of it, and then making their most ancient musicians, as Orpheus, Linus, and Amphion, of divine offspring. Homer, who was himself both poet and musician, could have supposed nothing more to the honour of his profession, than making the Gods themselves delighted with it; after the fierce contest that happened among them about the Grecian and Trojan affairs, he seigns them recreating themselves with Apollo's music; and after this, 'tis no wonder he thought it not below his Hero to have been instructed in, and a diligent practitioner of this Godlike art. And do not the poets universally testify this opinion of the excellency of music, when they make it a part of the entertainment at the tables of kings; where to the sound of the lyre they sing the praises of the Gods and Heroes, and other useful things: As Homer in the *Odyſſea* introduces Demodocus at the table of Alcinous, King of Phæacea, singing the Trojan war and the praises of the Heroes: And Virgil brings in Jopas at the table of Dido, singing to the sound of his golden harp, what he had learned in natural philosophy, and particularly in astronomy from Atlas; upon which Quintilian makes this reflection, that hereby the poet intends to shew the connection there is between music and heavenly things; and Horace teaches us the same doctrine, when addressing his lyre, he cries out, "O decus Phœbi, & dapibus supremi, grata testudo, Jovis."

At the beginning, music was perhaps sought only for the sake of innocent pleasure and recreation; in which view Aristotle calls it the medicine of that heaviness that proceeds from labour; and Horace calls his lyre *liberem dulce lenimen*: And as this is the first and most simple, so it is certainly no despicable use of it; our circumstances require such a help to make us undergo the necessary toils of life more chearfully. Wine and music cheer the heart, said the wise man; and that

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the same power still remains, does plainly appear by universal experience. Men naturally seek pleasure, and the wiser sort studying how to turn this desire into the greatest advantage, and mix the utile dulci, happily contrived, by bribing the ear, to make way into the heart. The severest of the philosophers approved of music, because they found it a necessary means of access to the minds of men, and of engaging their passions on the side of virtue and the laws; and so music was made an handmaid to virtue and religion.

Jamblichus in the life of Pythagoras tells us, That music was a part of the discipline by which he formed the minds of his scholars. To this purpose he made, and taught them to make and sing, verses calculated against the passions and diseases of their minds; which were also sung by a chorus, standing round one that played upon the lyre, the modulations whereof were perfectly adapted to the design and subject of the verses. He used also to make them sing some choice verses out of Homer and Hesiod. Music was the first exercise of his scholars in the morning; as necessary to fit them for the duties of the day, by bringing their minds to a right temper; particularly he designed it as a kind of medicine against the pains of the head, which might be contracted in sleep: And at night, before they went to rest, he taught them to compose their minds after the perturbations of the day, by the same exercise.

Whatever virtue the Pythagoreans ascribed to music, they believed the reason of it to be, That the soul itself consisted of harmony; and therefore they pretended by it to revive the primitive harmony of the faculties of the soul. By this primitive harmony they meant that which, according to their doctrine, was in the soul in its pre-existent state in heaven. Macrobius, who is plainly Pythagorean in this point, affirms, That every soul is delighted with musical sounds; not the polite only but the most barbarous nations practise music, whereby they are excited to the love of virtue, or dissolved in softness and pleasure: The reason is, says he, That the soul brings into the body with it the memory of the music which it was entertained with in heaven: And there are certain nations, says he, That attend the dead to their burial with singing; because they

believe the soul returns to heaven the fountain or original of music. Lib. 2. in *Somnium Scipionis*. And because this fact believed the Gods themselves to have celestial bodies of a most perfect harmonious composition, therefore they thought the Gods were delighted with it; and that by our use of it in sacred things, we not only compose our minds, and fit them better for the contemplation of the Gods, but imitate their happiness, and thereby are acceptable to them, and open for ourselves a return into heaven.

Athenæus reports of one Clinias a Pythagorean, who, being a very choleric and wrathful man, as soon as he found his passion begin to rise, took up his lyre and sung, and by this means allayed it. But this discipline was older than Pythagoras; for Homer tells us, That Achilles was educated in the same manner by Chiron, and feigns him, after the hot dispute he had with Agamemnon, calming his mind with his song and lyre: And tho' Homer should be the author of this story, it shews however that such an use was made of music in his days; for 'tis reasonable to think he had learned this from experience.

The virtuous and wise Socrates was no less a friend to this admirable art; for even in the decline of his age he applied himself to the lyre, and carefully recommended it to others. Nor did the divine Plato differ from his great master in this point; he allows it in his common-wealth; and in many places of his works speaks with the greatest respect of it, as a most useful thing in society. He says it has as great influence over the mind, as the air has over the body; and therefore he thought it was worthy of the law to take care of it. He understood the principles of the art so well, that, as Quintilian justly observes, there are many passages in his writings not to be understood without a good knowledge of it. Aristotle in his politics agrees with Plato in his sentiments of music.

Aristides the philosopher and musician, in the introduction to his treatise on this subject, says, 'tis not so confined either as to the subject matter or time as other arts and sciences, but adds ornament to all the parts and actions of human life: Painting, says he, attains that good which regards the eye, medicine and gymnastic
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are good for the body, dialectic and that kind helps to acquire prudence, if the mind be first purged and prepared by music. Again, it beautifies the mind with the ornaments of harmony, and forms the body with decent motions: 'tis fit for young ones, because of the advantages got by fingering; for persons of more age, by teaching them the ornaments of modulate diction, and of all kinds of eloquence; to others more advanced it teaches the nature of number, with the variety of proportions, and the harmony that thereby exists in all bodies, but chiefly the reasons and nature of the soul. He says, as wise husband-men first cast out weeds and noxious plants, then sow the good seed, so music is used to compose the mind, and fit it for receiving instruction: for pleasure, says he, is not the proper end of music, which affords recreation to the mind only by accident, the proposed end being the instilling of virtue. Again, he says, if every city, and almost every nation loves decency and humanity, music cannot possibly be useless.

It was used at the feasts of princes and heroes, says Athenæus, not out of levity and vain mirth; but rather as a kind of medicine, that by making their minds cheerful, it might help their digestion: There, says he, they sung the praises of the Gods and heroes and other useful and instructive composures, that their minds might not be neglected while they took care of their bodies; and that from a reverence of the Gods, and by the example of good men, they might be kept within the bounds of sobriety and moderation.

But we are not confined to the authority and opinion of philosophers or any particular persons; we have the testimony of whole nations where it had public encouragement, and was made necessary by the law; as in the most part of the Grecian common-wealths.

Athenæus assures us, That anciently all their laws divine and civil, exhortations to virtue, the knowledge of divine and human things, the lives and actions of illustrious men, and even histories, and mentions Herodotus, were written in verse and publicly sung by a chorus, to the sound of instruments; they found this by experience an effectual means to impress morality, and a right sense of duty: Men were attentive to things
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that were proposed to them in such a sweet and agreeable manner, and attracted by the charms of harmonious numbers, and well modulated sounds; they took pleasure in repeating these examples and instructions, and found them easier retained in their memories. Aristotle also in his problems tells us, That before the use of letters, their laws were sung musically, for the better retaining them in memory. We have a very old and remarkable proof of this virtue of music in the story of Orpheus and Amphion, both of them poets and musicians, who made a wonderful impression upon a rude and uncultivated age, by their virtuous and wise instructions, enforced by the charms of poetry and music: The succeeding poets, who turned all things into mystery and fable, feign the one to have drawn after him, and tamed the most savage beasts; and the other to have animated the very trees and stones, by the power of music. Horace had received the same traditions of all the things I have now narrated, and with these mentions other uses of music. The passage is in his book de arte Poetica, and is worth repeating.

*Silvestres homines, sacer interpretq; deorum,
Cædibus & visu sædo, deterruit Orpheus:
Dicitur ob hoc lenire tigres, rabidosq; leones:
Dicitur & Amphion, Thebææ conditor arcis,
Saxa movere sono testudinis, & prece blanda
Ducere quo vellet. Fuit hæc sapientia quondam,
Publica privatis secernere, sacra profanis:
Concubitu prohibere vago: dare sacra maritis:
Oppida moliri: leges incidere ligno:
Sic honor, & nomen divinis vatibus, atque
Carminibus venit. Post hos insignis Homerus,
Tyrtæusq; mares animos in martia bella
Versibus exacuit. Dicitæ per carmina sortes:
Et vitæ monstrata via est: & gratia regum
Pieriis tentata modis: ludusq; repertus,
Et longorum operum finis: ne forte pudori,
Sit tibi musa lyæ solers, et cantor Apollo.*

From these experiences I say, the art was publicly honoured by the governments of Greece. It was by the law made a necessary part of the education of youth. Plato assures us it was thus at Athens; in his first Al-
cibiades

cibiades, he mentions to that great man, in Socrates's name, how he was taught to read and write, to play on the harp, and wrestle. And in his *Crito*, he says, did not the laws most reasonably appoint that your father should educate you in music and gymnastic? And we find these three, grammar, music and gymnastic, generally named together, as the known and necessary parts of the education of youth, especially of the better sort: Plutarch and Athenæus give abundant testimony to this; and Terence having laid the scene of his plays in Greece, or rather only translated, and at most but imitated Menander, gives us another proof, in the *Act 3. Scene 2.* of his *Eunuch*. *Fac periculum in literis, fac in palæstra, in musicis. Quæ liberum scire æquum est adolescentem solertem dabo.*

The use of music in the Temples and solemn service of their Gods is past all question. Plato in his *Dialogues* concerning the laws, gives this account of the sacred music. That every song consist of pious words. That we pray to God to whom we sacrifice. That the poets, who know that prayers are petitions or requests to the Gods, take good heed they don't ask ill instead of good, and do nothing but what's just, honest, good and agreeable to the laws of the society; and that they shew not their compositions to any private person, before those have seen and approved them who are appointed judges of these things, and keepers of the laws: then, hymns to the praises of the Gods are to be sung, which are very well connected with prayer; and after the Gods, prayers and praises are to be offered to the dæmons and heroes.

As they had poetical compositions upon various subjects for their public solemnities, so they had certain determinate modes both in the harmonia and rythmus, which it was unlawful to alter; and which were hence called *nomi* or laws, and *musica canonica*. They were jealous of any innovations in this matter, fearful that a liberty being allowed, it might be abused to luxury; for they believed there was a natural connection between the public manners and music: Plato denied that the musical modes or laws could be changed without a change of the public laws; he meant, the influence of music was so great, that the changes in it would necessarily

fairly produce a proportional change of manners and the public constitution.

The use of it in war will easily be allowed to have been by public authority; and the thing we ought to remark is, that it was not used as a mere signal, but for inspiring courage, raising their minds to the ambition of great actions, and freeing them from base and cowardly fear; and this was not done without great art, as Virgil shews when he speaks of Misenus,

—*Quo non præstantior alter,
Ære ciere vires, martemque accendere cantu.*

From Athens let us come to Lacedemon, and here we find it in equal honour. Their opinion of its natural influence was the same with that of their neighbours: and to shew what care was taken by the law, to prevent the abuse of it to luxury, the historians tell us that Timotheus was fined for having more than seven strings on his lyre, and what were added ordered to be taken away. The Spartans were a warlike people, yet very sensible of the advantage of fighting with a cool and deliberate courage; therefore as Gellius out of Thucydides reports, they used not in their armies, instruments of a more vehement sound, that might inflame their temper, and make them more furious, as the tūba, cornu and lituus, but the more gentle and moderate sounds and modulations of the tibia, that their minds being more composed, they might engage with a rational courage. And Gellius tells us, the Cretans used the Cithara to the same purpose in their armies. We have already heard how this people entertained at great expence the famous Thaies to instruct their youth in music; and after their music had been thrice corrupted, thrice they restored it.

If we go to Thebes, Epaminondas will be a witness of the esteem it was in, as Corn. Nepos informs us.

Athenæus reports, upon the authority of Theopompus, that the Getan ambassadors, being sent upon an embassy of peace, made their entry with lyres in their hands, singing and playing to compose their minds, and make themselves masters of their temper. We need

need not then doubt of its public encouragement among this people.

But the most famous instance in all Greece, is that of the Arcadians, a people, says Polybius, in reputation for virtue among the Greeks; especially for their devotion to the Gods. Music, says he, is esteemed every where, but to the Arcadians it is necessary, and allowed a part in the establishment of their state, and an indispensable part of the education of their children. And tho' they might be ignorant of other arts and sciences without reproach, yet none might presume to want knowledge in music, the law of the land making it necessary; and insufficiency in it was reckoned infamous among that people. It was not thus established, says he, so much for luxury and delight, as from a wise consideration of their toilsome and industrious life, owing to the cold and melancholy air of their climate; which made them attempt every thing for softening and sweetning those austerities they were condemned to. And the neglect of this discipline he gives as the reason of the barbarity of the Cynæthians, a people of Arcadia.

We shall next consider the state of music among the ancient Romans. Till luxury and pride ruin'd the Manners of this brave nation; they were famous for a severe and exact virtue. And tho' they were convinced of the native charms and force of music, yet we don't find they cherish'd it to the same degree as the Greeks; from which one would be tempted to think they were only afraid of its power, and the ill use it was capable of: A caution that very well became those who valued themselves so much, and justly, upon their piety and good manners.

Corn. Nepos, in his preface, takes notice of the differences between the Greek and Roman customs, particularly with respect to music; and in the life of Epaminondas, he has these words; *Scimus enim musicum nostris moribus abesse a principis persona; saltare etiam in vitiis poni; quæ omnia apud Græcos & gratia & laude digna ducuntur.*

Cicero in the beginning of the first book of his Tusculan Questions, tells us, that the old Romans did not study the more soft and polite arts so much as the
Greeks;

Greeks; being more addicted to the study of morality and government: hence music had a fate somewhat different at Rome.

But the same Cicero shews us plainly his own opinion of it. Lib. 2. de Legibus; *Assentior enim Platoni, nihil tam facile in animos teneros atque molles influere quam varios canendi sonos. Quorum dici vix potest quanta sit vis in utramque partem, namque & incitat languentes, & languescit incitados, et tum remittit animos, tum contrahit.* Certainly he had been a witness to this power of sound, before he could speak so; and I shall not believe he had met with the experiment only at Athens. A man so famous for his eloquence, must have known the force of harmonious numbers, and well proportioned tones of the voice.

Quintilian speaks honourably of music. He says, Lib. 1. Chap. 11. Nature seems to have given us this gift for mitigating the pains of life, as the common practice of all labouring men testifies. He makes it necessary to his orator, because, says he, Lib. 8. Chap. 4. It is impossible that a thing should reach the heart which begins with choking the ear; and because we are naturally pleased with harmony, otherwise Instruments of music that cannot express words would not make such surprising and various effects upon us. And in another place, where he is proving art to be only nature perfected, he says, music would not otherwise be an art, for there is no nation which has not its songs and dances.

Some of the first rank at Rome practised it. Athenæus says of one Masurius, a lawyer, whom he calls one of the best and wisest of men, and inferior to none in the law, that he applied himself to music diligently. And Plutarch places music, viz. singing and playing on the lyre, among the qualifications of Metella, the daughter of Scipio Metellus.

Macrobius in the 10 Chap. Lib. 2. of his Saturnalia shews us, that neither singing nor dancing were reckoned dishonourable exercises even for the quality among the ancient Romans; particularly in the times between the two Punick wars, when their virtue and manners were at the best; provided they were not studied with too much curiosity, and too much time
spent

spent about them; and observes, that it is this, and not simply the use of these, that Salust complains of in Sempronia, when he says she knew *psallere & saltare elegantius quam necesse erat probæ*. What an opinion Macrobius himself had of music we have in part shewn already; to which let us add here this remarkable passage in the place formerly cited. *Ita denique omnis habitus animæ cantibus gubernatur, ut & ad bellum progressui & etiam receptui canatur, cantu & excitante & rursus sedante virtutem; dat somnos adimitque necnon curas & immittit & retrahit, iram suggerit, clementiam suadet, corporum quoque morbis medetur. Hinc est quod agris remedia præstantes præcinere dicuntur.* The abuse of it, which 'tis probable lay chiefly in their idle, ridiculous, and lascivious dancing, or perhaps their spending too much time even in the most innocent part of it, and not applying it to the true ends, made the wiser sort cry out, and brought the character of a musician into some discredit. But we find, that the true and proper music was still in honour and practice among them: had Rome ever such poets, or were they ever so honoured as in Augustus's reign? Horace, tho' he complains of the abuse of the theatre, and the music of it, yet in many places he shews us, that it was then the practice to sing verses or odes to the sound of the lyre, or of pipes, or of both together; Lib. 4. Ode 9. *Verba loquor focianda chordis.* Lib. 2. Ep. 2. *Hic ego verba lyrae motura sonum connectere digner?* In the first Ode, Lib. 1. he gives us his own character as a poet and musician, *Si neque tibiae Euterpe cohibet, &c.* He shews us, that it was in his time used both publicly in the praise of the gods and men, and privately for recreation, and at the tables of the great, as we find clearly in these passages. Lib. 4. Ode 11. *Condisce modos amanda voce quos reddas, minuentur atræ carmine curæ.* Lib. 3. Ode 28. *Nos cantabimus invicem Neptunum, tu curva recines lyra Latonam, &c.* Lib. 4. Ode 15. *Noiſque & proſectis lucibus & ſacris—Rite Deos pius adprecati, virtute ſunctos more patrum duces, Lydis remiſto carmine tibiis Trojamque, &c. canemus.* Epode 9. *Quando repositum cæcubam ad festas dapes tecum.—Beate Mecenas bibam? Sonante miſtis tibiis*

carmen lyra. Lib, 3. Ode 11. Tuque testudo—Nunc & divitum mensis & amica templis.

For all the abuses of it, there were still some, even of the best characters, that knew how to make an innocent use of it: Sueton in Titus's life, whom he calls *Amor ac deliciæ generis humani*, among his other accomplishments adds, *Sed ne Musicæ quidem rudis, ut qui cantaret & psalleret jucunde scienterque.*

There is enough said to shew the real value and use of music among the ancients. I believe it will be needless to insist much upon our own experience; I shall only say, these powers of music remain to this day, and are as universal as ever. We use it still in war and in sacred things, with advantages that they only know who have the experience. But in common life, almost every body is a witness of its sweet influences.

What a powerful impression musical sounds make even upon the brute animals, especially the feathered kind, we are not without some instances. But how surprising are the accounts we meet with among the old writers? I have reserved no place for them here. You may see a variety of stories in *Ælian's History of Animals*, *Strabo*, *Pliny*, *Marcianus Capella*, and others.

Before I leave this, I must take notice of some of the extraordinary effects ascribed to music. Pythagoras is said to have had an absolute command of the human passions, to turn them as he pleased by music: they tell us, that meeting a young man who in great fury was running to burn his rival's house, Pythagoras allayed his temper, and diverted the design, by the sole power of music. The story is famous how Timotheus, by a certain strain or modulation, fired Alexander's temper to that degree, that forgetting himself, in a warlike rage, he killed one of the company, and by a change of the music was softened again, even to a bitter repentance of what he had done. But Plutarch speaks of one Antigenides, a Tibicen or piper, who by some warlike strain had transported that hero so far, that he fell upon some of the company. Terpander quelled a Sedition at Sparta by means of music. Thales being called from Crete, by advice of the oracle,

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to Sparta, cured a raging pestilence by the same means. The cure of diseases by music is talked of with enough of confidence. Aulus Gellius, Lib. 4. Chap. 13, tells us, it was a common tradition, that those who were troubled with the Sciatica (he calls them Ischiaci) when their pain was most exquisite, were eased by certain gentle modulations of music performed upon the Tibiæ; and says, he had read in Theophrastus, that by certain artful modulations of the same kind of instrument, the bites of serpents or vipers had been cured. Clytemnestra had her vicious inclinations to unchastity corrected by the applications of musicians. And a virtuous woman is said to have diverted the wicked design of two rakes that assaulted her, by ordering a piece of music to be performed in the Spondean mode.

A short HISTORY of the IMPROVEMENTS in M U S I C.

FOR what reasons the Greek musicians made such a difficult matter of their notes and signs we cannot guess, unless they did it designedly to make their art mysterious, which is an odious supposition; but one can scarcely think it was otherwise, who considers how obvious it was to find a more easy method. This was therefore the first thing the Latins corrected in the Greek music, as we have already heard was done by Boethius, and further improved by Gregory the Great.

The next step in this improvement is commonly ascribed to Guido Aretinus, a Benedictin monk, of Are-tium in Tuscany, who, about the year 1024, (tho' there are some differences about the year) contrived the use of a ~~five~~ staff of 5 lines, upon which, with its spaces he marked his notes, by setting points (.) up and down upon them, to denote the rise and fall of the voice, (but as yet there were no different marks of time;) he marked each line and space at the beginning of the staff, with Gregory's 7 letters, and when he spoke of the
notes

notes, he named them by these instead of the long Greek names of *Proslambanomenos*, &c. The Correspondence of these letters to the names of the chords in the Greek system being settled, the degrees and intervals between any line or space, and any other were hereby understood. But this artifice of points and lines was used before his time, by whom invented is not known; and this we learn from Kircher, who says he found in the Jesuits library at Messina a Greek manuscript book of hymns, more than 700 years old; in which some hymns were written on a stave of 8 lines, marked at the beginning with 8 Greek letters; the notes or points were set upon the lines, but no use made of the spaces: Vincenzo Galileo confirms us also in this. But whether Guido knew this, is a question; and tho' he did, yet it was well contrived to use the spaces and lines both, by which the notes lye nearer each other, fewer lines are needful for any interval, and the distances of notes are easier reckoned.

But there is yet more of Guido's contrivance, which deserves to be considered; First, He contrived the 6 musical syllables, *ut, re, mi, fa, sol, la*, which he took out of this latin hymn.

UT queant laxis RE sonare fibris
Mira gestorum FAMuli tuorum,
SOLVE polluti LABii reatum,
O pater alme,

In repeating this it came into his mind, by a kind of divine instinct says Kircher, to apply these syllables to his notes of music: a wonderful contrivance certainly for a divine instinct! But let us see where the excellency of it lies: Kircher says, by them alone he unfolded all the nature of music, distinguished the tones (or modes) and the seats of the semitones. Elsewhere he says, That by the application of these syllables he cultivated music, and made it fitter for singing. In order to know how he applied them, there is another piece of the history we must take along, viz. That finding the Greek Diagram of too small extent, he added 5 more chords or notes in this manner; having applied the letter A to the *Proslambanomenos*,
and

and the rest in order to Nete Hyperbolæon, he added a chord, a Tonus below Proslam. and called it Hypo-proslambanomenos, and after the Latins g. but commonly marked with the Greek Γ; to shew by this, some say, that the Greeks were the inventors of music; but others say, he meant to record himself (that letter being the first in his name) as the improver of music; hence the Scale came to be called the Gamm. Above Nete Hyperbolæon he added other 4 chords, which made a new disjunct Tetrachord, he called Hyperhyperbolæon; so that his whole Scale contained 20 diatonic notes, (for this was the only Genus now used) besides the b flat, which corresponded to the Trite Synemmenon of the ancients, and made what was afterwards called the series of b molle, as we shall hear.

Now the application of these syllables to the Scale was made thus: Between mi and fa is a semitone; ut : re, re : mi, fa : sol, and sol : la are tones (without distinguishing greater and lesser;) then because there are but 6 syllables, and 7 different notes or letters in the 8ve; therefore, to make mi and fa fall upon the true places of the natural semitones, ut was applied to different letters, and the rest of the 6 in order to the others above; the letters to which ut was applied are g. c. f. according to which he distinguished three series, viz. that which began with ut in g, and he called it the series of b durum, because b was a whole tone above a; that which began with ut in c was the series of b natural, the same as the former; and when ut was in f, it was called b molle, wherein b was only a semitone above a. See the whole scale in the following scheme,

GUIDO's

GUIDO's SCALE.

	<i>B. dur</i>	<i>nat.</i>	<i>moll.</i>
<i>e e</i>	<i>la</i>	<i>mi</i>	
<i>d d</i>	<i>sol</i>	<i>re</i>	<i>la</i>
<i>c c</i>	<i>fa</i>	<i>ut</i>	<i>sol</i>
<i>b b</i>	<i>mi</i>		
<i>♯</i>			<i>fa</i>
<i>a a</i>	<i>re</i>	<i>la</i>	<i>mi</i>
<i>g</i>	<i>ut</i>	<i>sol</i>	<i>re</i>
<i>f</i>		<i>fa</i>	<i>ut</i>
<i>e</i>	<i>la</i>	<i>mi</i>	
<i>d</i>	<i>sol</i>	<i>re</i>	<i>la</i>
<i>c</i>	<i>fa</i>	<i>ut</i>	<i>sol</i>
<i>b</i>	<i>mi</i>		
<i>♭</i>			<i>fa</i>
<i>a</i>	<i>re</i>	<i>la</i>	<i>mi</i>
<i>G</i>	<i>ut</i>	<i>sol</i>	<i>re</i>
<i>F</i>		<i>fa</i>	<i>ut</i>
<i>E</i>	<i>la</i>	<i>mi</i>	
<i>D</i>	<i>sol</i>	<i>re</i>	
<i>C</i>	<i>fa</i>	<i>ut</i>	
<i>B</i>	<i>mi</i>		
<i>A</i>	<i>re</i>		
<i>Γamm</i>	<i>ut</i>		

where observe, the series of *b* natural stands between the other two, and communicates with both; so that to name the chords of the scale by these syllables, if we would have the semitones in their natural places, viz. *b . c*, and *c . f*, then we apply *ut* to *g*, and after *la*, we go into the series of *b* natural at *fa*, and after *la* of this, we return to the former at *mi*, and so on; or we may begin at *ut* in *c*, and pass into the first series at *mi*, and then back to the other at *fa*: by which means the one transition is a semitone, viz. *la . fa*, and the other a tone *la : mi*. To follow the order of *b* mollé, we may begin with *ut* in *c* or *f*, and make transitions the same way

as formerly: hence came the barbarous names of *Gamm*, *mut*, *Are*, *Bmi*, &c. with which the memories of learners used to be oppressed. But now what a perplexed work is here; with so many different syllables applied to every chord; and all for no other purpose but marking the places of the semitones, which the simple letters *a : b . c*; &c. do as well, and with infinite more ease. Afterwards some contrived better, by making seven syllables, adding *Si* in the blanks you see in the series between *la* and *ut*, so that *mi-fa* and *fi-ut* are the two natural semitones: These 7 completing the 8ve, they took away the middle series as of no use, and so *ut* being in *g* or *f*, made the series of *B durum* (or natural, which is all one) and *B mollé*. But the English throw out both *ut* and *fi*, and make the other 5 serve for all. This wonderful contrivance of Guido's six syllables, is

what

what a very ingenious man thought fit to call *Crux tenellorum ingeniorum*; but he might have said it of any of the Methods; for which reason, I believe, they are laid aside with very many, and, I am sure, ought to be so with every body.

But to go on with Guido; the letters he applied to his lines and spaces, were called keys, and at first he marked every line and space at the beginning of a stave with its letter; afterwards marked only the lines, as some old examples shew; and at last marked only one, which was therefore called the signed Clef; of which he distinguished three different ones, *g*, *c*, *f*; (the three letters he had placed his ut in) and the reason of this leads us to another article of the history, viz. That Guido was the inventor of Symphonic composition, (for if the ancients had it, it was lost; but this shall be considered again) the first who joined in one harmony several distinct melodies, and brought it even the length of 4 parts, viz. Bass, Tenor, Counter, and Treble; and therefore to determine the places of the several Parts in the general system, and their relations to one another, it was necessary to have 3 different signed Clefs.

He is also said to be the contriver of those instruments they call *Polyplectra*, as spinets and harpsichords: however they may now differ in shape, he contrived what is called the *Abacus* and the *Palmulae*, that is, the Machinery by which the string is struck with a *Plectrum* made of quills. Thus far go the improvements of Guido Aretinus, and what is called the Guidonian System; to explain which he wrote a book he calls his *Micrologum*.

The next considerable improvement was about 300 years after Guido, relating to the *Rythmus*, and the marks by which the duration of every note was known; for hitherto they had but imitated the simplicity of the ancients, and barely followed the quantity of the syllables, or perhaps not so accurate in that, made all their notes of equal duration, as some of the old Ecclesiastic music is an instance of. To produce all the effects music is capable of, the necessity of notes of different quantity was very obvious; for the *Rythmus* is the soul of music; and because the natural quantity

of the syllables was not thought sufficient for all the variety of movements, which we know to be so agreeable in music, therefore about the year 1330 or 1333, says Kircher, the famous Joannes de Muris, Doctor at Paris, invented the different figures of notes, which express the time, or length of every note, at least their true relative proportions to one another. Anciently they were called, Maxima, Longa, Brevis, Semibrevis, Minima, Semiminima, Chroma, (or Fusa) Semichroma. What we call the Demisemiquaver is of modern addition. But whether all these were invented at once is not certain, nor is it probable they were; at first 'tis like they used only the Longa and Brevis, and the rest were added by degrees. Now also was invented the division of every song in separate and distinct bars or measures. Then for the proportion of these notes one to another it was not always the same; so a Long was in some cases equal to two Breves, sometimes to three, and so of others; and this difference was marked generally at the beginning; and sometimes by the position or way of joining them together in the middle of the song; but this variety happened only to the first four. Again, respecting the mutual proportions of the notes, they had what they called Modes, Prolations and Times: The two last were distinguished into Perfect and Imperfect; and the first into greater and lesser, and each of these into perfect and imperfect: but afterwards they reduced all into 4 modes including the Prolations and Times. I could not think it worth pains to make a tedious description of all these, with their marks or signs, which you may see in the already mentioned *Dictionnaire de Musique*: I shall only observe here, That as we now make little use of any note above the Semibreve, because indeed the remaining 6 are sufficient for all purposes, so we have cast off that difficulty of various and changeable proportions between the same notes: the proportions of 3 to 1 and 2 to 1 was all they wanted, and how much more easy and simple is it to have one proportion fixt, viz. 2 : 1 (i. e. a Large equal to two Longs, and so on in order) and if the proportion of 3 : 1 between two successive notes is required, this is, without any manner of confusion or difficulty, expressed by annexing a point (.) on

on the right hand of the greatest of the two notes, as has been above explained; so that 'tis almost a wonder how the elements of music were so long involved in these perplexities, when a far easier way of coming to the same end was not very hard to find.

We shall observe here too, That till these notes of various Time were invented, instrumental performances without song must have been very imperfect if they had any; and what a wonderful variety of entertainments we have by this kind of composition, I need not tell you.

There remain two other very considerable steps, before we come to the present state of the scale of music. Guido first contrived the joining different parts in one concert, as has been said, yet he carried his system no further than 20 diatonic notes: now for the more simple and plain compositions of the Ecclesiastic stile, which is probable was the most considerable application he made of music, this extent would afford no little variety; but experience has since found it necessary to enlarge the system even to 36 diatonic notes, which are represented in the foremost range of keys on the breast of a harpsichord; for so many are required to produce all that admirable variety of harmony, which the parts in modern compositions consist of, according to the many different stiles practised: but a more considerable defect of his system is, That except the tone between a and b, which is divided into two semitones by ♭ (flat) there was not another tone in all the scale divided; and without this the system is very imperfect with respect to fixed sounds, because without these there can be no right modulation or change from key to key. Therefore the modern system has in every five 5 artificial chords or notes, which we mark by the letters of the natural chords, with the distinction of ♯ or ♭. Observe, That by these additional chords, we have the diatonic and chromatic Genera of the ancients mixed; so that compositions may be made in either kind, tho' we reckon the diatonic the true natural species; and if at any time, two semitones are placed immediately in succession: for example, if we sing c. c♯. d, which is done for variety, tho' seldom, so far this is a mixture of the chromatic; but then to make it pure chromatic, no

smaller interval can be sung after two semitones ascending than a Triemitone, nor descending less than a Tone; because in the pure chromatic scale the Spissum has always above it a Triemitone, and below it either a Triemitone or a Tone.

The last thing I shall consider here is, how the modes were defined in these days of improvement; and I find they were generally characterised by the species of *8ve* after Ptolomy's manner, and therefore reckoned in all 7. But afterwards they considered the harmonical and arithmetical divisions of the *8ve*, whereby it resolves into a 4th above a 5th, or a 5th above a 4th. And from this they constituted 12 modes, making of each *8ve* two different modes according to this different division; but because there are two of them that cannot be divided both ways, therefore there are but 12 modes. To be more particular, consider, in the natural system there are 7 different octaves proceeding from these 7 letters, a, b, c, d, e, f, g; each of which has two middle chords, which divide it harmonically and arithmetically, except f, which has not a true 4th, (because b is three tones above it, and a 4th is but two tones and a semitone) and b, which consequently wants the true 5th (because f is only two tones and two semitones above it, and a true 5th contains three tones and a semitone) therefore we have only 5 octaves that are divided both ways, viz. a, c, d, e, g, which makes 10 modes according to these different divisions, and the other two f and b make up the 12. These that are divided harmonically, i. e. with the 5ths lowest were called authentic, and the other plagal modes. See the following scheme.

To these modes they gave the names of the ancient Greek tones, as Dorian, Phrygian: but several authors differ in the application of these names, as they do about the order, as, which they shall call the first and second, &c. which being arbitrary things, as far as I can understand, it were as idle to pretend to reconcile

M O D E S.

Plagal. *Authentic.*

8ve. 8ve.

4th.		5th.	4th.
g --- c		g --- c	
a --- d		a --- d	
b --- e		b --- e	
c --- f		c --- f	
d --- g		d --- g	
e --- a		e --- a	

them, as it was in them to differ about it. The material point is, if we can find it, to know what they meant by these distinctions, and what was the real use of them in music; but even here where they ought to have agreed, we find they differed. The best account to be given of it is this: They considered that an 8ve which wants a 4th or 5th, is imperfect; these being the concords next to 8ve, the song

ought to touch these chords most frequently and remarkably; and because their concord is different, which makes the melody different, they established by this two modes in every natural octave, that had a true 4th and 5th: then if the song was carried as far as the octave above, it was called a perfect mode; if less, as to the 4th or 5th, it was imperfect; if it moved both above and below, it was called a mixt mode: thus some authors speak about these modes. Others considering how indispensable a chord the 5th is in every mode, they took for the final or key-note in the arithmetically divided octaves, not the lowest chord of that octave, but that very 4th; for example, the octave g is arithmetically divided thus, g - c - g, c is a 4th above the lower g, and a 5th below the upper g, this c therefore they made the final chord of the mode, which therefore properly speaking is c and not g; the only difference then in this method, between the authentic and plagal modes is, that the authentic goes above its final to the octave, the other ascends a 5th, and descends a 4th, which will indeed be attended with different effects, but the mode is essentially the same, having the same final to which all the notes refer. We must next consider wherein the modes of one species, as authentic or plagal, differ among themselves: This is either by their standing higher or lower in the scale, i. e. the different tension of the whole octave; or rather the different Subdivision of the octave into its concinnous degrees; there is not another. Let us consider then whether

whether these differences are sufficient to produce so very different effects, as have been ascribed to them, for example, one is said to be proper for mirth, another for sadness, a third proper to religion, another for tender and amorous subjects, and so on: whether we are to ascribe such effects merely to the constitution of the octave, without regard to other differences and ingredients in the composition of melody, I doubt any body now a days will be absurd enough to affirm; these have their proper differences, 'tis true, but which have so little influence, that by the various combinations of other causes, one of these modes may be used to different purposes. The greatest and most influencing difference is that of these octaves, which have the 3d l. or 3d g. making what is above called the sharp and flat key: but we are to notice, that of all the 8ves, except c and a, none of them have all their essential chords in just proportion, unless we neglect the difference of tone greater and lesser, and also allow the semi-tone to stand next the fundamental in some flat keys (which may be useful, and is sometimes used;) and when that is done, the octaves that have a flat 3d will want the 6th g. and 7th g. which are very necessary on some occasions; and therefore the artificial notes ✕ and ♭ are of absolute use to perfect the system. Again, if the modes depend upon the species of 8ves, how can they be more than 7? And as to this distinction of authentic and plagal, I have shown that it is imaginary, with respect to any essential difference constituted hereby in the kind of the melody; for tho' the carrying the song above or below the final, may have a different effect, yet this is to be numbered among the other causes, and not ascribed to the constitution of the octaves. But 'tis particularly to be remarked, that these authors who give us examples in actual composition of their 12 modes, frequently take in the artificial notes ✕ and ♭ to perfect the melody of their key; and by this means depart from the constitution of the 8ve, as it stands in the fixt natural system. So we can find little certain and consistent in their way of speaking about these things; and their modes are all reducible to two, viz. the sharp and flat; other differences respecting only the place of the scale where

the

the fundamental is taken : I conclude therefore that the true theory of modes, is where they are distinguished into two species, sharp and flat, whose effects must be allowed are different ; but other causes must concur to any remarkable effect ; and therefore 'tis unreasonable to talk as if all were owing to any one thing. What they called the series of b molle, was no more than this, That because the 8ve f had a 4th above at b, excessive by a semitone, and consequently the 8ve b had a 5th above as much deficient, therefore this artificial note b flat or \flat , served them to transpose their modes to the distance of a 4th or 5th, above or below ; for taking \flat a semitone above a, the rest keeping their ratios already fixt, the series proceeding from c with b natural (i. e. a tone above a) is in the same order of degrees, as that from f with b flat (i. e. \flat a semitone above a ;) but f is a 4th above c, or a 5th below ; therefore to transpose from the series of b natural to b molle we ascend a 4th or descend a 5th ; and contrarily from b molle to the other : This is the whole mystery ; but they never speak of the other transpositions that may be made by other artificial notes.

You may also observe, that what they called the ecclesiastic tones, are no other than certain notes in the organ which are made the final or fundamental of the hymns ; and as modes they differ, some by their place in the scale, others by the sharp and flat 3d ; but even here every author speaks not the same way : 'tis enough we know they can differ no other way, or at least all their differences can be reduced to these. At first they were four in number, whose finals were d, e, f, g, constituted authentically : this choice, we are told, was first made by St. Ambrose, bishop of Milan ; and for being thus chosen and approved, they pretend the name authentic was added : afterwards Gregory the Great added four plagals, a, b, c, d, whose finals are the very same with the first four, and in effect are only a continuation of these to the 4th below ; and for this connection with them were called plagal, tho' the derivation of the word is not so plain.

The

The Ancient and Modern Music compared.

THE last age was famous for the war that was raised, and eagerly maintained by two different parties, concerning the ancient and modern genius and learning. Among the disputed points music was one. I know of nothing new to be advanced on either side.

The question in general is, Whether the ancients or the moderns best understood and practised music? Some affirm, that the ancient art of music is quite lost, among other valuable things of antiquity, vid. Pancirollus, de Musica. Others pretend, That the true science of harmony is arrived to much greater perfection than what was known or practised among the ancients. The fault with many of the contenders on this point is, that they fight at long weapons; I mean they keep the argument in generals, by which they make little more of it than some innocent harangues and flourishes of rhetorick, or at most make bold assertions upon the authority of some misapplied expressions and incredible stories of ancient writers, for I am now speaking chiefly of the patrons of the ancient music.

If Sir William Temple was indeed serious, and had any thing else in his view, but to shew how he could declaim, he is a notable instance of this. Says he, “What are become of the charms of music, by which
“men and beasts were so frequently enchanted, and
“their very natures changed; by which the passions
“of men were raised to the greatest height and violence, and then as suddenly appeased, so as they
“might be justly said, to be turned into lions or lambs,
“into wolves or into harts, by the power and charms
“of this admirable art?” And he might have added too, by which the trees and stones were animated; in spite of the sense which Horace puts upon the stories of Orpheus and Amphion. But this question shall be considered presently. Again he says. “’Tis agreed
“by the learned, that the science of music, so admired
“of the ancients, is wholly lost in the world, and
“that what we have now, is made up out of certain
“notes that fell into the fancy or observation of a
“poor fryar, in chanting his mattins. So that those
“two

“ two divine excellencies of music and poetry, are
 “ grown in a manner, but the one fiddling and the
 “ other rhyming, and are indeed very worthy the ig-
 “ norance of the friar, and the barbarousness of the
 “ Goths that introduced them among us.” Some
 learned men indeed have said so; but as learned have
 said otherwise: And for the description Sir William
 gives of the modern music, it is the poorest thing ever
 was said, and demonstrates the author’s utter ignorance
 of music: Did he know what use Guido made of these
 notes? He means the syllables, ut, re, mi, &c. for
 these are the notes he invented. If the modern music
 falls short of the ancient, it must be in the use and
 application; for the materials and principles of har-
 mony are the same thing, or rather they are improved;
 for Guido’s scale to which he applied these syllables,
 is the ancient Greek scale only carried to a greater
 extent; and which is much improved since.

As I have stated the question, we are first to compare
 the principles and then the practice.

Meibomius, no enemy to the ancient cause, speaking
 of Aristides, calls him, *Incomparabilis antiquæ musicæ*
Auctor, & vere exemplar unicum, who, he says, has
 taught and explained all that was ever known or taught
 before him, in all the parts. We have Aristoxenus;
 and for what was written before him, he affirms to
 have been very deficient: nor do the later writers ever
 complain of the loss of any valuable author that was
 before them.

Now we may suppose it will be manifest to the un-
 prejudiced, who consider what has been explained both
 of the ancient and modern principles and theory of
 harmonics, that they have not known more of it than
 we do, plainly because we know all theirs; and that we
 have improved upon their foundation, will be as plain,
 from the accounts I have given of both, and the com-
 parison I have drawn all along in explaining the ancient
 theory; therefore I need insist no more upon this part.
 The great dispute is about the practice.

To understand the ancient practice of music, we are
 first to consider what the name signified with them.
 Music included these three things, harmony, rhythmus,
 and verse: if there needs any thing to be added, take

these few authorities. In Plato's first Alcibiades, Socrates asks what he calls that art which teaches to sing, play on the harp, and dance? and makes him answer, Music: But singing among them was never without verse. This is again confirmed by Plutarch, who says, "That in judging of the parts of music, reason and sense must be employed: for these three must always meet in our hearing, viz. Sound, whereby we perceive harmony; Time, whereby we perceive Rythmus; and Letters or Syllables, by which we understand what is said." Therefore we reasonably conclude, that their music consisted of verses sung by one or more voices, alternately, or in choirs; sometimes with the sound of instruments, and sometimes by voices only; and whether they had any music without singing, shall again be considered.

Let us now consider what idea their writers give us of the practical music. This we may expect, if 'tis to be found at all, from the authors who write expressly upon music, and pretend to explain it in all its parts. I have already shewn, that they make the musical faculties (as they call them) these, viz. Melopœia, Rythmopœia, and Pœsis. For the first, to make the comparison right, it shall be considered under these two heads, Melody and Symphony, and begin with the last. It has been observed, in explaining the principles of the ancient Melopœia, that it contains nothing but what relates to the conduct of a single voice, or making what we call melody: there is not the least word of the concert or harmony of parts; from which there is very great reason to conclude, that this was no part of the ancient practice, and is altogether a modern invention, and a noble one too; the first rudiments of which has been already said we owe to that same poor fryar (as Sir William Temple calls him) Guido Areteinus. But that there be no difference about mere words, observe, that the question is not, Whether the ancients ever joined more voices or instruments together in one Symphony; but, whether several voices were joined, so as each had a distinct and proper melody, which made among them a succession

sion of various Concords; and were not in every note Unisons, or at the same distance from each other, as 8ves? which last will agree to the general signification of the word Symphonia; yet 'tis plain, that in such cases there is but one song, and all the voices perform the same individual melody; but when the parts differ, not by the tension of the whole, but by the different relations of the successive notes, This is the modern art that requires so peculiar a genius, and good judgment, in which therefore 'tis so difficult to succeed well. The ancient harmonic writers, in their rules and explications of the Melopœia, speak nothing of this art: They tell us, that the Melopœia is the art of making songs; or more generally, that it is the use of all the parts and principles that are the subjects of harmonical contemplation. Now is it at all probable, that so considerable an use of these principles was known among the ancients, and yet never once mentioned by those who professed to write of Music in all its parts? Shall we think these concealed it, because they envied posterity so valuable an art? Or, was it the difficulty of explaining it that made them silent? They might at least have said there was such an art; the definition of it is easy enough: Is it like the rest of their conduct to neglect any thing that might redound in any degree to their own praise and glory? Since we find no notice of this art under the Melopœia, it cannot be expected in any other part. If any body should think to find it in the part that treats of systems, because that expresses a composition of several things, they will be disappointed: for these authors have considered systems only as greater intervals between whose extremes other notes are placed, dividing them into lesser intervals, in such a manner as a single voice may pass agreeably from the one extreme to the other. But in distinguishing systems, they tell us, some are consonant, some dissonant: Which names expressed the quality of these systems, viz. that of the first, the extremes are fit to be heard together, and the other not; and if they were not used in consonance, may some say, these names are wrong applied: but tho'

they signified that quality, it will not prove they were used in consonance, at least in the modern way: Besides, when they speak plainly and expressly of their use in succession or melody, they use the same names, to signify their agreement: And if they were used in consonance in the manner described, why have we not at least some general rules to guide us in the practice? Or rather, does not their silence in this, demonstrate there was no such practice? But tho' there is nothing to be found in those who have written more fully and expressly on music, yet the advocates for the ancient music find demonstration enough, they think, in some passages of authors that have given transient descriptions of music: but if these passages are capable of any other good sense than they put upon them, the silence of the professed writers on music will undoubtedly cast the balance on that side. Aristotle in his Treatise concerning the World, answers that question, If the world is made of contrary principles, how comes it that it is not long ago dissolved? He shews, that the beauty and perfection of it consists in the admirable mixture and temperament of different things; and among his illustrations brings in music thus, Music, by a mixture of acute and grave, also of long and short sounds of different voices, yields one absolute or perfect concert. Again, explaining the harmony of the celestial motions, where each orb, says he, has its own proper motion, yet all tend to one harmonious end, as they also proceed from one principle, making a choir in the heavens by their concord, and he carries on the comparison with music thus: As in a choir, after the Praecentor the whole choir sings, composed sometimes of men and women, who by the different acuteness and gravity of their voices, make one concinnous harmony.

Let Seneca appear next. Don't you see of how many voices the chorus consists? yet they make but one sound: in it some are acute, some grave, and some middle: women are joined with men, and whistles also put in among them: each single voice is concealed, yet the whole is manifest.

Cassiodorus

Cassiodorus says, Symphony is an adjustment of a grave sound to an acute, or an acute to a grave; making melody.

Now the most that can be made of these passages is, That the ancients used choirs of several voices differing in acuteness and gravity; which was never denied: But the whole of these definitions will be fully answered, supposing they sung all the same part or song only in different tensions, as 8ve in every note. And from what was premised, I think there is reason to believe this to be the only true meaning.

But there are other considerable things to be said that will put this question beyond all reasonable doubt. The word *harmonia* signifies more generally the agreement of several things that make up one whole; but so do several sounds in succession make up one song, which is in a very proper sense, a composition. And in this sense we have in Plato and others several comparisons to the harmony of sounds in music. But 'tis also used in the strict sense for consonance, and so is equivalent to the word *Symphonia*. Now we shall make Aristotle clear his own meaning in the passages adduced: he uses *Symphonia* to express two kinds of consonance; the one, which he calls by the general name *Symphonia*, is the consonance of two voices that are in every note unison; and the other, which he calls *Antiphonia*, of two voices that are in every note 8ve: In his Problems, § 19. Prob. 16. He asks why *Symphonia* is not as agreeable as *Antiphonia*; and answers, because in *Symphonia* the one voice being altogether like or as one with the other, they eclipse one another. The *Symphoni* here plainly must signify unisons, and he explains it elsewhere by calling them *Omophoni*: and that the 8ve is the *Antiphoni* is plain, for it was a common name to 8ve; and Aristotle himself explains the *Antiphoni* by the voice of a boy and a man that are as *Nete* and *Hypate*, which were 8ve in Pythagoras's lyre. Again, I own he is not speaking here of unison and 8ve simply considered, but as used in song; and tho' in modern Symphonies it is also true, that unison cannot be so frequently used with as good effect

effect as 8ve, yet his meaning is plainly this, viz. that when two voices sing together one song, 'tis more agreeable that they be 8ve than unison with one another, in every note: this I prove from the 17th Probl. in which he asks why Diapente and Diatessaron are never sung as the Antiphoni? He answers, because the Antiphoni, or sounds of 8ve, are in a manner both the same and different voices; and by this likeness, where at the same time each keeps its own distinct character, we are better pleased: therefore he affirms, that the 8ve can only be sung in Symphony. Now that by this he means such a Symphony is certain, because in modern counterpoint the 4th, and especially the 5th, are indispensable; and indeed the 5th with its two 3ds, are the life of the whole. Again, in Probl. 18. he asks why the Diapason only is magadised? And answers, because its terms are the only Antiphoni: now that this signifies a manner of singing, where the sounds are in every note 8ve to one another, is plain, from this word magadised, taken from the name of an instrument, in which two strings were always struck together for one note. Athenæus makes the Magadis the same with the Barbiton and Pectis; and Horace makes the muse Polyhymnia the inventor of the Barbiton.—*Nec Polyhymnia Lesboum refugit tendere Barbiton.*—And from the nature of this instrument, that it had two strings to every note, some think it probable the name Polyhymnia was deduced. Athenæus reports from Anacreon, that the Magadis had twenty chords; which is a number sufficient to make us allow they were doubled; so that it had in all ten notes: now anciently they had but three tones or modes, and each extended only to an 8ve, and being a tone ascender, required precisely ten chords; therefore Athenæus corrects Possidonius for saying the twenty chords were all distinct notes, and necessary for the three modes. But he further confirms this point by a citation from the comic poet Alexandrides, who takes a comparison from the Magadis, and says, I am like the Magadis, about to make you understand a thing that is at the same time both sublime and low; which
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proves that two strings were struck together, and that they were not unison. He reports also the opinion of the poet Jon, that the Magadis consisted of two flutes, which were both sounded together. From all this 'tis plain, That by magadised, Aristotle means such a consonance of sounds as to be in every note at the same distance, and consequently to be without Symphony and parts according to the modern practice. Athenæus reports also of Pindar, that he called the music sung by a boy and a man, Magadis; because they sung together the same song in two modes. Mr. Perault concludes from this, that the strings of the Magadis were sometimes 3ds, because Aristotle says, the 4th and 5th are never magadised: but why may not Pindar mean that they were at an 8ve's distance; for certainly Aristotle used that comparison of a boy and a man to express an 8ve: Mr. Perault thinks it must be a 3d, because of the word mode, whereof anciently there were but three; and confirms it by a passage out of Horace, Epod. 9. *Sonante mistum tibiis carmen lyra; hac Dorian illis Barbarum*: by the Barbarum, says he, is to be understood, the Lydian, which was a Ditone above the Dorian: but the difficulty is, that the ancients reckoned the Ditone at best a concinnous Discord; and therefore 'tis not probable they would use it in so remarkable a manner: but we have enough of this. The author last named observes, that the ancients probably had a kind of simple harmony, in which two or three notes were tuned to the principal chords of the key, and accompanied the song. This he thinks probable from the name of an instrument Pandora that Athenæus mentions; which is likely the same with the Mandora, an instrument not very long ago used, says he, in which there were four strings, whereof one served for the song, and was struck by a Plectrum or quill tied to the fore-finger: the other three were tuned so as two of them were an 8ve, and the other a middle, dividing the 8ve into a 4th and 5th: they were struck by the thumb, and this regulated by the rythmus or measure of the song, i. e. Four strokes for every measure of common time, and three for triple.

triple. He thinks Horace points out the manner of this instrument in Ode 6. *Lesbium servate pedem, meique pollicis ictum*, which he thus translates. Take notice, you who would join your voice to the sound of my lyre, that the measure of my song is sapphic, which the striking of my thumb marks out to you. This instrument is parallel to our common bagpipe.

The passages of Aristotle being thus cleared, Seneca and Cassiodorus may be easily given up. Seneca speaks of *vox media*, as well as *acuta* and *gravis*; but this can signify nothing, but that there might be two 8ves, one between the men and women, and the shrill tibia might be 8ve above the women: but then the latter part of what he says, destroys their cause; for *singulorum voces latent*, can very well be said of such as sing the same melody unison or octave, but would by no means be true of several voices performing a modern Symphony, where every part is conspicuous, with a perfect harmony in the whole. For Cassiodorus, what he says has no relation to consonance, An adjustment of a grave sound to an acute, or an acute to a grave making melody: if it be alledged that *temperamentum* may signify a mixture, it must be allowed; but then he ought to have said, *Temperamentum sonitus gravis & acuti*; for what means *sonitus gravis ad acutum*, and again *acuti ad gravem*? But in the other case, this is well enough, for he means, That melody may consist either in a progress from acute to grave, or contrarily: and then the word *modulamen* was never applied any other way than to successive sounds. There is another passage which H. Vossius cites from Ælian the Platonic, where he says, Symphony consists of two or more sounds differing in acuteness and gravity, with the same cadence and temperament: but this rather adds another proof that what Symphonies they had were only of several voices singing the same melody only in a different tone.

After such evident demonstrations, there needs no more to be said to prove, that Symphonies of different parts are a modern improvement. From their rejecting the 3ds and 6ths out of the number of concords, the
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small extent of their system being only two octaves, and having no tone divided but that between Mese and Paramese, we might argue that they had no different parts: for tho' some simple compositions of parts might be contrived with these principles, yet 'tis hard to think they would lay the foundations of that practice, and carry it no further; and much harder to believe, they would never speak one word of such an art and practice, where they profess to explain all the parts of music. But for the symphonies, which we allow them to have had, you will ask why these writers don't speak of them, and why it seems so incredible that they should have had the other kind without being ever mentioned, when they don't mention these we allow? The reason is plain, because the musician's business was only to compose the melody, and therefore they wanted only rules about that; but there was no rule required to teach how several voices may join in the same song, for there is no art in it: experience taught them that this might be done in unison or octave; and pray what had the writers more to say about it? But the modern symphony is a quite different thing, and needs much to be explained both by rules and examples. But 'tis time to make an end of this point: there is only to be added, that if plain reason needs any authority to support it, there can be adduced many moderns of character, who make no doubt to say, that after all their pains to know the true state of the ancient music, they could not find the least ground to believe there was any such thing in these days, as music in parts. Perrault has been named, and shall only add to him Kircher and Doctor Wallis, authors of great capacity and infinite industry.

Our next comparison shall be of the melody of the ancients and moderns; and here comes in what's necessary to be said on the other parts of music, viz. the rythmus and verse. In order to this comparison, melody shall be distinguished into vocal and instrumental. By the first, is meant music set to words, especially verses; and by the other, music composed only for instruments without singing. For the vocal you see by the definition that poetry makes a necessary part
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of it: this was not only of ancient practice, but the chief, if not their only practice, as appears from their definitions of music already explained. 'Tis not to be expected that there should be any comparison made of the ancient and modern poetry; 'tis enough to observe, That there are admirable performances in both; and if we come short of them, 'tis not for want either of genius or application: but perhaps we shall be obliged to own, that the Greek and Latin languages were better contrived for pleasing the ear. We are next to consider, that the rythmus of their vocal music was only that of the poetry, depending altogether on the verse, and had no other forms or variety than what the metrical art afforded: under the head of mutations, those who consider the rythmus make the changes of it no other than from one kind of metrum or verse to another, as from jambick to cho-raick: and we may notice too, That in the more general sense, the rythmus includes also, their dancings, and all the theatrical action. It is to be imagined therefore, that their vocal music consisted of verses, set to musical tones, and sung by one or more voices in choirs or alternately; sometimes with and also without the accompaniment of instruments: to which we may add, from the last article, That their symphonies consisted only of several voices performing the same song in different tones as unison and octave. For instrumental music, 'tis not so very plain that they used any: and if they did, 'tis more than probable the rythmus was only an imitation of the poetical numbers, and consisted of no other measures than what were taken from the variety and kinds of their verses; of which they pretended a sufficient variety for expressing any subject according to its nature and property: and since the chief design of their music seems to have been to move the heart and passions, they needed no other rythmus. It cannot be denied, that there are many passages which fairly insinuate their practice upon instruments without singing; so Athenæus says, The Synaulia was a contest of pipes performing alternately without singing. And Quintilian hath this expression, If the numbers and airs of music have such a virtue, how much more ought eloquent words to have? That
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is to say, the other has virtue or power to move us, without respect to the words. But if they had any rythmus for instrumental performances, which was different from that of their poetical measures, how comes it to pass that those authors who have been so full in explaining the signs by which their notes of music were represented, speak not a word of the signs of time for instruments? Whatever be in this, it must be owned that singing with words was the most ancient practice of music, and the practice of their more solemn and perfect entertainments, as appears from all the instances above adduced, to prove the ancient use and esteem of music: and that it was the universal and common practice, even with the vulgar, appears by the pastoral dialogues of the poets, where the contest is ordinarily about their skill in music, and chiefly in singing.

Let us next consider what the present practice (among Europeans at least) consists of. We have, first, vocal music; and this differs from the ancient in these respects, viz. That the constitution of the rythmus is different from that of the verse, so far, that in setting music to words, the thing principally minded is, to accommodate the long and short notes to the syllables in such manner as the words may be well separated, and the accented syllable of every word so conspicuous, that what is sung may be distinctly understood: the movement and measure is also suited to the different subjects, for which the variety of notes, and the constitutions or modes of time afford sufficient means. Then we differ from the ancients in our instrumental accompaniments, which compose symphonies with the voice, some in unison, others making a distinct melody; which produces a ravishing entertainment they were not blest with, or at least without which we should think ours imperfect. Then there is a delightful mixture of pure instrumental symphonies, performed alternately with the song. Lastly, We have compositions fitted altogether for instruments: the design whereof is not so much to move the passions, as to entertain the mind and please the fancy with a variety of harmony and rythmus; the principal effect of which is to raise delight and admiration. This is the plain state of the

ancient and modern music, in respect of practice : but to determine which of them is most perfect, will not perhaps be so easily done to satisfy every body. Tho' we believe their's to have been excellent in its kind, and to have had noble effects ; this will not please some, unless we acknowledge ours to be barbarous, and altogether ineffectual. The effects are indeed the true arguments ; but how shall we compare these, when there remain no examples of ancient composition to judge by : so that the defenders of the ancient music admire a thing they don't know ; and in all probability judge not of the modern by their personal acquaintance with it, but by their fondness for their own notions. Those who study our music, and have well tuned ears, can bear witness to its noble effects : yet perhaps it will be replied, That this proceeds from a bad taste, and something natural, in applauding the best thing we know of any kind. But let any body produce a better, and we shall heartily applaud it. They bid us bring back the ancient musicians, and then they will effectually shew us the difference ; and we bid them learn to understand the modern music, and believe their own senses : in short, we think we have better reason to determine in our own favours, from the effects we actually feel, than any body can have from a thing they have no experience of, and can pretend to know no other way than by report : but we shall consider the pretences of each party a little nearer. It has been already observed, that the principal end the ancients proposed in their music, was to move the passions ; and to this purpose poetry was a necessary ingredient. We have no dispute about the power of poetical compositions to affect the heart, and move the passions, by such a strong and lively representation of their proper objects, as that noble heart is capable of : the poetry of the ancients we own is admirable ; and their verses being sung with harmonious cadences and modulations, by a clear and sweet voice, supported by the agreeable sound of some instrument, in such manner that the hearer understood every word that was said, which was all delivered with a proper action, that is, pronunciation and gestures suitable to, or expressive of the subject,

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as we also suppose the kind of verse, and the modulation applied to it was; taking their vocal music in this view, we make no doubt that it had admirable effects in exciting love, pity, anger, grief, or any thing else the poet had a mind to: but then they must be allowed to affirm, who pretend to have the experience of it, That the modern music, taking it in the same sense, has all these effects. Whatever truth may be in it, we shall pass what Doctor Wallis alledges, viz. That these ancient effects were most remarkably produced upon rustics, and at a time when music was new, or a very rare thing: but it must be observed with him, That the passions are easily wrought upon. The deliberate reading of a romance well written will produce tears, joy, or indignation, if one gives his imaginations a looſe; but much more powerfully when attended with the things mentioned: so that it can't be thought so very mysterious and wonderful an art to excite passion, as that it should be quite lost. Our poets are capable to express any moving story in a very pathetic manner: our musicians too know how to apply a suitable modulation and rythmus: and we have those who can put the whole in execution; so that a heart capable of being moved will be forced to own the wonderful power of modern music: the Italian and English theatres afford sufficient proof of this; so that it is to be believed, were we to collect examples of the effects that the acting of modern tragedies and operas have produced, there would be no reason to say we had lost the art of exciting passion. But 'tis needless to insist on a thing which so many know by their own experience. If some are obstinate to affirm, That we are still behind the ancients in this art, because they have never felt such effects of it; we will ask them if they think every temper and mind among the ancients was equally disposed to relish, and be moved by the same things? If tempers differed then, why may they not now, and yet the art be at least, as powerful as ever? Again, have we not as good reason to believe those who affirm they feel this influence, as you who say you have never experienced it? And if you put the matter altogether upon the authority of others, pray, is not the testimony

testimony of the living for the one, as good as that of the dead for the other?

But still there are wonders pretended to have been performed by the ancient music, which we can produce nothing like; such as those amazing transports of mind, and hurrying of men from one passion to another, all on a sudden, like the moving of a machine, of which we have so many examples in history. For these we shall answer, That what is reckoned incredible in them may justly be laid upon the historians, who frequently aggravate things beyond what's strictly true, or even their credulity in receiving them upon weak grounds; and most of these stories are delivered to us by writers who were not themselves witnesses of them, and had them only by tradition and common report. If nothing like this had ever been justly objected to the ancient historians, we might think ourselves obliged to find another answer: but since 'tis so, we may be allowed to doubt of these facts, or suspect at least that they are in a great degree hyperbolical. Consider but the circumstances of some of them as they are told, and if they are literally true, and can be accounted for no other way but by the power of sound, it must be owned they had an art which is lost: for example, the quelling of a sedition. Let us represent to ourselves a furious rabble, envenomed with discontent, and enraged with oppression; or let the grounds of their rebellion be as imaginary as you please, still we must consider them as all in a flame; suppose next, they are attacked by a skilful musician, who addresses them with his pipe or lyre; how likely is it that he should persuade them by a song to return to their obedience, and lay down their arms? Or rather, how probable is it that he may be torn to pieces, as a solemn mocker of their just resentment? But that there may be allowed some foundation for such a story, we will suppose a man of great authority for virtue, wisdom, and the love of mankind, comes to offer his humble and affectionate advice to such a company; we will suppose too, he delivers it in verse, and perhaps sings it to the sound of his lyre, (which seems to have been a common way of delivering public exhortations in more ancient times,
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the music being used as a means to gain their attention,) it cannot be thought impossible that this man may persuade them to peace, by representing the danger they run, aggravating the mischief they are like to bring upon themselves and the society, or also correcting the false views they may have had of things. But then will any body say, all this is the proper effect of music, unless reasoning be also a part of it? And must this be an example of the perfection of the ancient art, and its preference to ours? In the same manner may other instances alledged be accounted for, such as Pythagoras's diverting a young man from the execution of a wicked design, the reconciliation of two inveterate enemies, the curing of Clytemnestra's vicious inclinations, &c. Horace's explication of the stories of Orpheus and Amphion, makes it probable we ought to explain all the rest the same way. For the story of Timotheus and Alexander, as commonly represented, it is indeed a very wonderful one, but we must here allow something to the boldness or credulity of the historian: That Timotheus, by singing to his lyre, with moving gesture and pronunciation, a well composed poem of the achievements of some renowned hero, as Achilles, might awaken Alexander's natural passion for warlike glory, and make him express his satisfaction with the entertainment in a remarkable manner, is in no wise incredible: we are to consider too the fondness he had for the Iliad, which would dispose him to be moved with any particular story out of that: but how he should forget himself so far, as to commit violence on his best friend, is not so easily accounted for, unless we suppose him at that time as much under the power of Bacchus as of the muses: and that a softer theme sung with equal art, should please a hero who was not insensible of Venus's influences, is no mystery, especially when his mistress was in company: but there is nothing here above the power of modern poetry and music, where it meets with a subject the same way disposed, to be wrought upon. To make an end of this, the historians, by saying too much, have given us ground to believe very little. What do you think of curing a raging pestilence by music?
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For curing the bites of serpents, we cannot so much doubt it, since that of the Tarantula has been cured in Italy. But then they have no advantage in this instance: and we must mind too, that this cure is not performed by exquisite art and skill in music; it does not require a Correlli or Valentini, but is performed by strains discovered by random trials without any rule: and this will serve for an answer to all that's alledged of the cure of diseases by the ancient music.

'Tis time to bring this comparison to an end; and after what's explained, it must be owned, that the state of music is much more perfect now than it was among the ancient Greeks and Romans. The art of music, and the true science of harmony in sounds is greatly improved. Their music has been allowed (including poetry and the theatrical action) to have been very moving; but at the same time it must be said, their melody has been a very simple thing, as their system or scale plainly shews.

And the confining all their rythmus to the poetical numbers, is another proof of it, and shews that there has been little air in their music; which by this appears to have been only of the recitative kind, that is, only a more musical speaking, or modulated elocution; the character of which is to come near nature, and be only an improvement of the natural accents of words by more pathetic or emphatical tones; the subject whereof may be either verse or prose. And as to their instruments of music, for any thing that appears certain and plain to us, they have been very simple. Indeed the public laws in Greece gave check to the improvement of the art of harmony, because they forbade all innovations in the primitive simple music; of which there are abundance of testimonies. Plato says, in his Treatise of the Laws, viz. That they entertained not in the city the makers of such instruments as have many strings, as the Trigonus and Pectis; but the Lyra and Cithara they used, and allowed also some simple Fistulæ in the country. But 'tis certain, that primitive simplicity was altered; so that from a very few strings, they used a great number: but there is much uncertainty about the use of them, as whether it
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was for mixing their modes, and the genera, or for striking two chords together as in the magadis. Since instruments have been mentioned, two things must be observed, first, That they pretend to have had tibiae of different kinds, whose specific sounds were excellently chosen for expressing different subjects. Then, there is a description of the Organum hydraulicum in Tertulian, which some adduce to prove how perfect their instruments were.—*Specula portentosam Archimedis munificentiam; organum hydraulicum dico, tot membra, tot partes, tot compagine, tot itinera vocum, tot compendia sonorum, tot commercia modorum, tot acies tibiarum, & una moles erunt omnia.* But it will not be pretended to have been more perfect than our modern organs: And what have they to compare of the stringed kind, with our harpsichords; and all the instruments that are struck with a bow?

After all, if our melody or songs are only equal to the ancients, it is to be hoped, the art of music is not lost as some pretend. But then, what an improvement in the knowledge of pure harmony has been made, since the introduction of the modern symphonies? Here it is, that the mind is ravished with the agreement of things seemingly contrary to one another. We have here a kind of imitation of the works of nature, where different things are wonderfully joined in one harmonious unity: And as some things appear at first view the farthest removed from symmetry and order, which from the course of things we learn to be absolutely necessary for the perfection and beauty of the whole; so discords being artfully mixed with concords, make a more perfect composition, which surprises us with delight. If the mind is naturally pleased with perceiving of order and proportion, with comparing several things together, and discerning in the midst of a seeming confusion, the most perfect and exact disposition and united agreement; then the modern concertts must undoubtedly be allowed to be entertainments worthy of our natures: And with the harmony of the whole we must consider the surprising variety of air, which the modern constitutions and modes of time or rythmus afford; by which, in our instrumental performances, the sense and imagination are so

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mightily charmed. Now, this is an application of music to a quite different purpose from that of moving passion: But is it reasonable upon that account, to call it idle and insignificant, as some do. It was certainly a noble use of music to make it subservient to morality and virtue; and if we apply it lets that way, 'tis because we had less need of such allurements to our duty: but whatever be the reason of this, 'tis enough to the present argument, that our music is at least not inferior to the ancient in the pathetic kind: and if it be not a low and unworthy thing for us to be pleased with proportion and harmony, in which there is properly an intellectual beauty, then it must be confessed, that the modern music is more perfect than the ancient. But why must the moving of particular passions be the only use of music? If we look upon a noble building, or a curious painting, we are allowed to admire the design, and view all its proportions and relation of parts with pleasure to our understandings, without any respect to the passions. We must observe again, that there is scarce any piece of melody that has not some general influence upon the heart; and by being more sprightly or heavy in its movements, will have different effects; tho' it is not designed to excite any particular passion, and can only be said in general to give pleasure, and recreate the mind. But why should we dispute about a thing which only strangers to music can speak ill of? And for the harmony of different parts, the defenders of the ancient music own it to be a valuable art, by their contending for its being ancient: let me therefore again affirm, that the moderns have wonderfully improved the art of music. It must be acknowledged indeed, that to judge well, and have a true relish of our more elaborate and complex music, or to be sensible of its beauty, and taken with it, requires a peculiar genius, and much experience, without which it will seem only a confused noise; but I hope this is no fault in the thing. If one altogether ignorant of painting looks upon the most curious piece, wherein he finds nothing extraordinary moving to him, because the excellency of it may lie in the design and admirable proportion and situation of the parts which he

he takes no notice of: must we therefore say, it has nothing valuable in it, and capable to give pleasure to a better judge? What, in music or painting, would seem intricate and confused, and so give no satisfaction to the unskilled, will ravish with admiration and delight, one who is able to unravel all the parts, observe their relations and the united concord of the whole. But now, if this be such a real and valuable improvement in music, you will ask, How it can be thought the ancients could be ignorant of it, and satisfy themselves with such a simple music, when we consider their great perfection in the sister arts of poetry and painting, and all other sciences? How it comes that the ancients left us any thing to invent or improve? And how comes it that different ages and nations have genius and fondness for different things? The ancients studied only how to move the heart, to which a great many things necessarily concurred, as words, tune, and action; and by these we can still produce the same effects; but we have also a new art, whose end is rather to entertain the understanding, than to move particular passions. What connection there is between their improving other sciences and this, is not so plain as to make any certain conclusion from it. And as to their painting, there have been very good reasons alleged to prove, That they followed the same taste there as in the music, i. e. the simple obvious beauties, of which every body might judge and be sensible. Their end was to please and move the people, which is better done by the senses and the heart than by the understanding; and when they found sufficient means to accomplish this, why should we wonder that they proceeded no further, especially when to have gone much beyond, would likely have lost their design. But, say you, this looks as if they had been sensible there were improvements of another kind to be made: suppose it was so, yet they might stop when their principal end was obtained. And Plutarch says as much, for he tells us it was not ignorance that made the ancient music so simple, but it was so out of politic: yet he complains, that in his own time, the very memory of the ancient modes that had been so useful in the

education of youth, and moving the passions, was lost thro' the innovations and luxurious variety introduced by later musicians; and now, when a full liberty seems to have been taken, may we not wonder that so little improvement was made, or at least so little of it explained and recorded to us by those who wrote of music, after such innovations were so far advanced.

This dispute (which is perhaps too tedious already) shall be ended with a short consideration of what the boldest accuser of the modern music, Isaac Vossius, says against it, in his book *de poematum cantu & viribus rythmi*. He observes, what a wonderful power motion has upon the mind, by communication with the body; how we are pleased with rythmical or regular motion; then he observes, that the ancient Greeks and Latins perceiving this, took an infinite pains to cultivate their language, and make it as harmonious, especially in what related to the rythmus, or number and combination of long and short syllables, as possible; to this end particularly were the *pedes metrici* invented, which are the foundations of their versification; and this he owns was the only rythmus of their music, and so powerful, that the whole effect of music was ascribed to it. And to prove the power attributed to the rythmus, he cites several passages. That it gives life to music, especially the pathetic, will not be denied; and we see the power of it even in plain prose and oratory; but to make it the whole, is perhaps attributing more than is due: it is rather to be thought the words and sense of what's sung, the principal ingredient; and the other a noble servant to them, for raising and keeping up the attention, because of the natural pleasure annexed to these sensations. 'Tis very true, that there is a connection between certain passions, which we call motions of the mind, and certain motions in our bodies; and when by any external motion these can be imitated and excited, no doubt we shall be much moved; and the mind, by that influence, becomes either gay, soft, brisk or drowsy: but how any particular passion can be excited without such a lively representation of its proper object, as only words afford, is not very intelligible; at least this appears to me the most just and effectual way.

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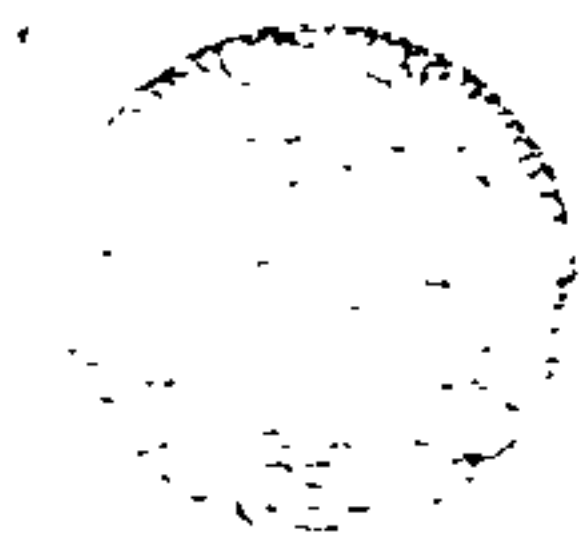
But let us hear what notion others had of this matter, Quintilian says, If the numbers of music have such influence, how much more ought eloquent words to have? And in all the ancient music the greatest care was taken, that not a syllable of the words should be lost, for spoiling the sense, which Vossius himself observes and owns. Pancirollus, who thinks the art lost, ascribes the chief virtue of it to the words.—*Siquidem una cum melodia integra percipiebantur verba*: and the very reason he gives, that the modern music is less perfect, is, that we hear sounds without words, by which, says he, the ear is a little pleased, without any entertainment to the understanding: but all this has been considered already. Vossius alledges the mimic art, to prove, that the power of motion was equal to the most eloquent words; but we shall be as much straitned to believe this, as the rest of their wonders. Let them believe it who will, that a pantomime had art to make himself easily understood without words, by people of all languages: and that Roscius, the comedian, could express any sentence by his gestures, as significantly and variously, as Cicero with all his oratory. Whatever this art was, 'tis lost, and perhaps it was something very surprising; but 'tis hard to believe these stories literally. However to the thing in hand, we are concerned only to consider the musical or poetical rhythmus.

Vossius says, that rhythmus which does not contain and express the very forms and figures of things, can have no effect; and that the ancient poetical numbers alone are justly contrived for this end. And therefore the modern languages and verse are altogether unfit for music; and we shall never have, says he, any right vocal music, till our poets learn to make verses that are capable to be sung, that is, as he explains it, till we new model our languages, restore the ancient metrical feet, and banish our barbarous rhimes. Our verses, says he, run all as it were on one foot, without distinction of members and parts, in which the beauty of proportion is to be found; therefore he reckons, that we have no rhythmus at all in our poetry; and affirms, that we mind nothing but to have such a
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certain number of syllables in a verse, of whatever nature, and in whatever order. Now, what a rash and unjust criticism is this! if it was so in his mother tongue, the Dutch, I know not; but it is otherwise in English. 'Tis true, we don't follow the metrical composition of the ancients; yet we have such a mixture of strong and soft, long and short syllables, as makes our verses flow, rapid, smooth, or rumbling, agreeable to the subject. Take any good English verse, and by a very small change in the transposition of a word or syllable, any body who has an ear will find, that we make a very great matter of the nature and order of the syllables. But why must the ancient be the only proper metre for poetry and music? He says, their odes were sung, as to the rythmus, in the same manner as we scan them, every pes being a distinct bar or measure, separate by a distinct pause; but in the bare reading, that distinction was not accurately observed, the verse being read in a more continuous manner. Again he notices, that after the change of the ancient pronunciation, and the corruption of their language, the music decayed till it became a poor and insignificant art. Their odes had a regular return of the same kind of verse; and the same quantity of syllables in the same place of every similar verse: but there's nothing, says he, but confusion of quantities in the modern odes; so that to follow the natural quantity of our syllables, every stanza will be a different song, otherwise than in the ancient verses: (he should have minded, that every kind of ode was not of this nature; and how heroic verses were sung, if this was necessary, is hard to be discovered, because in them the dactylus and spondens are sometimes in one place of the verse, and sometimes in another.) But instead of this, he says, the moderns have no regard to the natural quantity of the syllables, and have introduced an unnatural and barbarous variety of long and short notes, which they apply without any regard to the subject and sense of the verse, or the natural pronunciation: so that nothing can be understood that's sung, unless one knows it before; and therefore, no wonder, says he, that our vocal music has no effects. Now
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here is indeed a heavy charge, but experience gives me authority to affirm it to be absolutely false. We have vocal music as pathetic as ever the ancient was. If any singer don't pronounce intelligibly, that is not the fault of the music, which is always so contrived, as the sense of the words may be distinctly perceived. But this is impossible, says he, if we don't follow the natural pronunciation and quantity; which is precariously said; for was the singing of the ancient odes by separate and distinct measures of metrical feet, in which there must frequently be a stop in the very middle of a word, was this the natural pronunciation, and the way to make what was sung best understood? He tells us, they read their poems otherwise. And if practise would make that distinct enough to them, will it not be as sufficient in the other case. Again, to argue from what's strictly natural, will perhaps be no advantage to their cause; for don't we know, that the ancients admitted the most unnatural positions of words, for the sake of a numerous stile, even in plain prose; and took still greater liberties in poetry, to depart from the natural order in which ideas lie in our mind; far otherwise than it is in the modern languages, which will therefore be more easily and readily understood in singing, if pronounced distinctly, than the ancient verse could be, wherein the construction of the words was more difficult to find, because of the transpositions. Again the difference of long and short syllables in common speaking, is not accurately observed; not even in the ancient languages; for example, in common speaking, who can distinguish the long and short syllables in these words, satis, nivis, misit. The sense of a word generally depends upon the right pronunciation of one syllable, or two at most in very long words; and if these are made conspicuous, and the words well separated by a right application of the long and short notes, as we certainly know to be done, then we follow the natural pronunciation more this way than the other. If 'tis replied, that since we pretend to a poetical rythmus, suitable to different subjects, why don't we follow it in our music? 'Tho' that rythmus is more distinguished in the recitation of poems,
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vet our musical rythmus is accommodated also to it ; but with such liberty as is necessary to make good melody ; and even to produce stronger effects than a simple reciting can do ; and I would ask, for what other reason the ancients sung their poems in a manner different from the bare reading of them ? Still he tells us, that we want the true rythmus, which can only make pathetic music ; and if there is any thing moving in our songs, he says, 'tis only owing to the words ; so that prose may be sung as well as verse : that the words ought naturally to have the greatest influence, has been already considered ; and there is no reason why the ancient poetical rythmus should have the only claim to the pathetic ; as if they had exhausted all the combinations of long and short sounds, that can be moving or agreeable : but indeed the question is about matter of fact, by this defence of the modern music, it is not all alike good, or that there can be no just objection laid against any of our compositions, especially in the setting of music to words ; there is only to be said, that we have admirable compositions, and that the art of music, taken in all that it is capable of, is more perfect than it was among the old Greeks and Romans, at least for what can possibly be made appear.



F I N I S.